

ROBERT F. PEABODY FOUNDATION
FOR ARCHAEOLOGY

FIRST ANNUAL REPORT
OF THE
BELIZE ARCHAIC ARCHAEOLOGICAL
RECONNAISSANCE

BY
RICHARD STOCKTON MACNEISH
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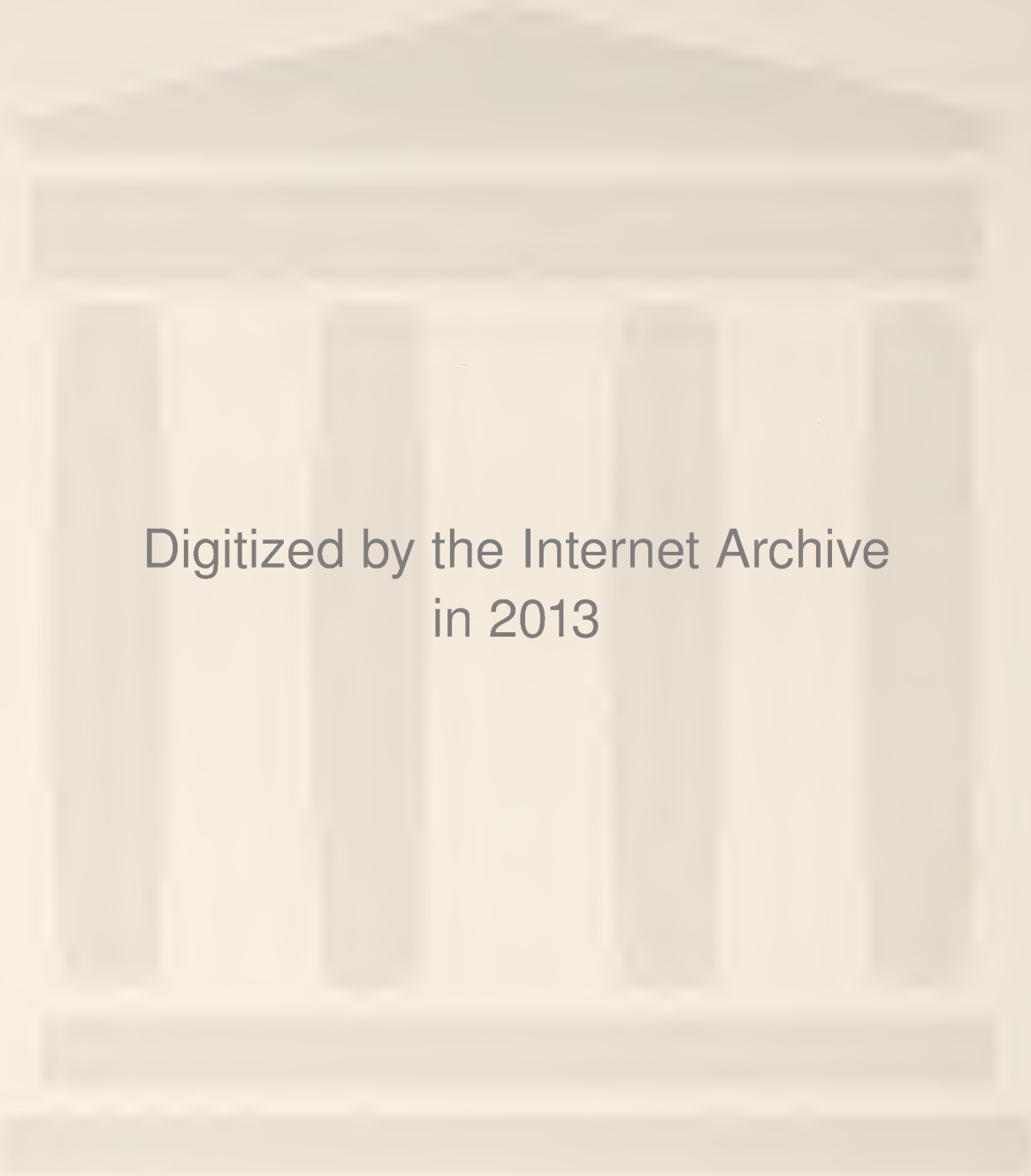
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RECONNAISSANCE

Number One

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INTRODUCTION

The brief archaeological reconnaissance in Coastal Belize during the winter and spring of 1980 by the Robert S. Peabody Foundation for Archaeology was a continuation of our long program investigating the beginning of agriculture and concomitant rise of village life in the New World. On a general level, we were interested in how and why village agriculture came into existence anywhere. On a specific level, we were concerned with finding preceramic sites in the Maya lowland that could serve as the basis for a sequence of stages or phases leading to the first Maya villages with pottery and agriculture. It might be added that initially the finding of preceramic sites in the Maya lowlands seemed to be a formidable task, for none had been discovered in the area despite one hundred fifty years of exploration by the "greats" of New World archaeology. Why did this institution take on such an impossible task in such a region? To understand this, let me relate some of the background leading up to our finding 230 such sites belonging to five phases or complexes which covered about seven to eight thousand years of preceramic times.

These Belizean discoveries all started with the senior author, Dr. Richard S. MacNeish, when he found 4,500-year-old preceramic corn in Tamaulipas, Mexico, in 1949 (MacNeish, 1958). This began the "great corn hunt" with Paul Mangelsdorf, which eventually led to the Peabody Foundation's "Tehuacan Archaeological-Botanical Project" (MacNeish, 1978). This in turn led to the startling discovery of the outlines of a 12,000-year cultural sequence with well-documented subsistence patterns in the area. However, equally as important as these 1960 findings, was the subsequent creation of some hypotheses about how and why the village agriculture that eventually led to Pristine civilization developed (MacNeish et al). The next step, obviously, was to test these hypotheses, and thus the Ayacucho Archaeological-Botanical Project came into being in the early 1970's (MacNeish, 1970). Vast amounts of data were accumulated in highland Peru, which resulted in an even longer 25,000-year sequence with some evolving subsistence information. In terms of our general goals and problems while some of the Tehuacan hypotheses were tested during that project and found to be valid or subject to modification, it became apparent that these highland developments were only half of the picture and that at least in Peru the coastal development was very different, although interconnected. Also, at about this same time MacNeish and Nelken-Terner were exchanging information about early Peruvian and Mexican developments with J. Wilkerson. In the late sixties Wilkerson had found some preceramic remains on the coast of Veracruz (Wilkerson, 1974, 1975, 1975a, and 1977) that had vague resemblances to those of lowland Peru and even the Levant of the Near East. Together, we began developing some new hypotheses about the development of village agriculture in diachronous lowland areas, and we began to talk of testing them with data from Mesoamerica (MacNeish, 1978).

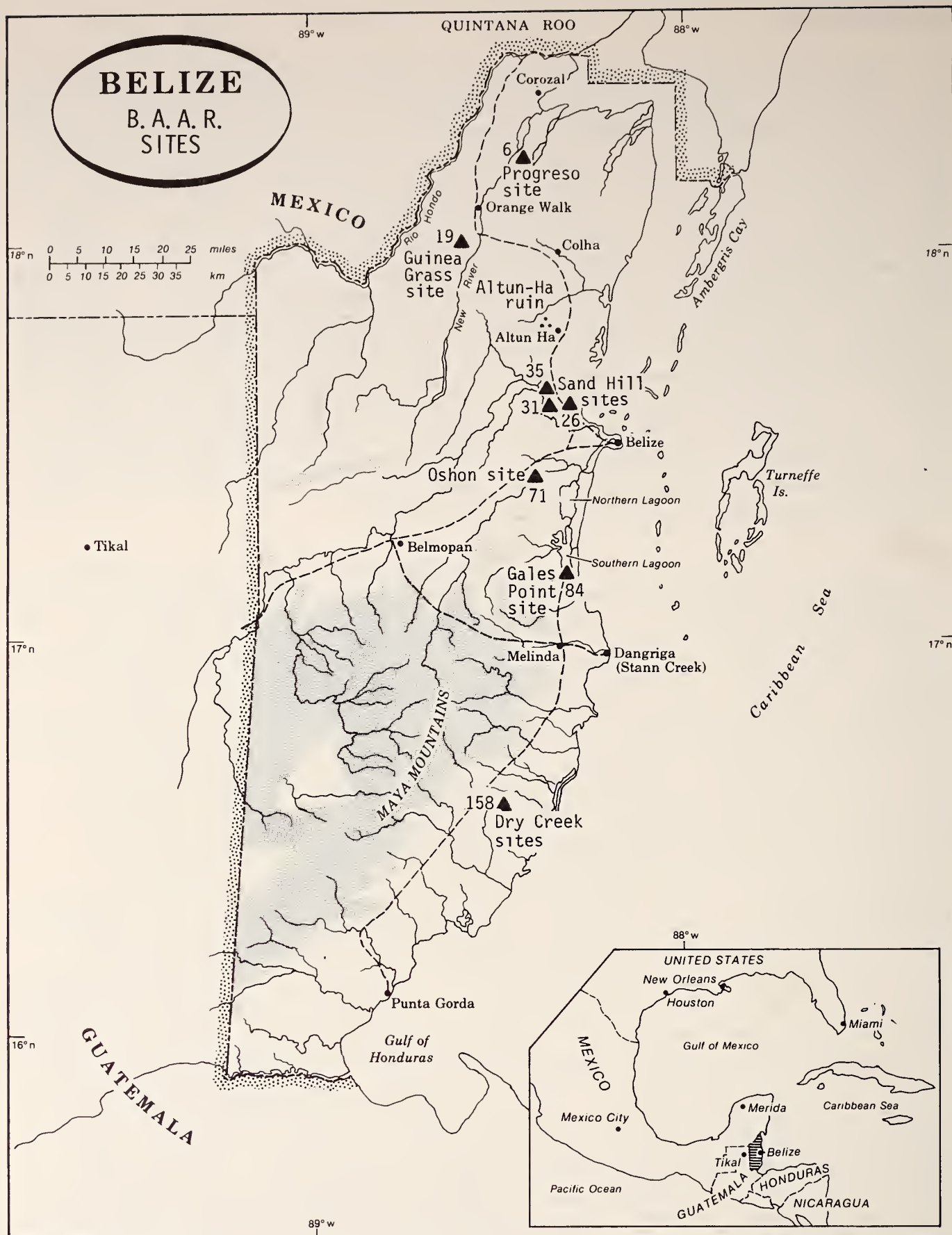


Fig. 1. Map of Belize showing relevant sites.

The question now became where to collect such sequential preceramic data in lowland Mesoamerica. Obviously, Wilkerson's region of the Tecolutla drainage was a possibility, and a volume edited by Voorhies and Stark suggested a number of others in Mexico, but there were problems with the new 15 percent discriminatory tax against foreign archaeological investigations in Mexico (Stark and Voorhies, 1978). A more viable possibility came about by accident in the winter of 1979, as Nelken-Terner and MacNeish went to visit Norman Hammond's Cuello site near Orange Walk in coastal Belize, and realized that this region's ecology was not dissimilar to that of coastal Veracruz and that at least one preceramic site had been discovered in a similar environmental situation (Hammond, 1979). Wilkerson and MacNeish now began discussions of doing a joint project in Belize.

By July it became possible for them to get together to study and discuss the matter. The result was that they submitted a well thought-out beautiful proposal to one granting agency. However, before Dr. MacNeish left for Veracruz to do this task he had been reminded that the closing date for a proposal to another agency would come during his stay in Veracruz, so he slapped another together over the weekend without administrative help or any of Wilkerson's fine planning. Knowing the "Peer grant" system, you know what resulted; the one we worked so hard on was turned down, and the other one we got--albeit in limited amounts. It was to be a "hit and run job" (reconnaissance) with limited personnel and funds during the winter of 1980, because we did not want to commit ourselves to bringing a large amount of equipment, many students, or a complex administrative set-up.

Thus, it was not only "hit and run" but also "borrow and beg," but thanks to a lot of nice people, we were very successful in latter as well as the former. First and foremost, we are beholden to Norman Hammond, who was not only our sponsor but also our landlord. Not only did he and his assistant, Karen Bruhn, guide Toni Nelken-Terner and MacNeish through their first visit in 1979, but in 1980, at cost, Hammond housed, fed, and liquored us in his Cuello camp, lent us students, gave advice, and discussed archaeological problems with us. The going would have been very tough without him and his group, and we will be forever in their debt. We also must thank Paul Healy of Trent University, Canada, who rented us our most essential piece of equipment--his four-wheel drive Ford pick-up truck with a winch. Although its tires occasionally frustrated us, the truck took us to places where the Ford Motor Company never dreamed the equipment would be required to go. Like an old mule one cursed and kicked, it never let us down. Another group of archaeologists who were our friends in need were those from the University of Texas at San Antonio, at their Colha camp. Although we owe all of them our thanks, the two chiefs, Tom Hester and Harry Shafer, stand out in our minds as those on an official level who were a great help (Hester, 1979). It might be added that it was those two who introduced us to David Lowe, a collector in Sand Hill, who had early points from an ecozone we had not planned to exploit and thus changed our whole survey program. Both David and his wife Gloria were great hosts while we

tested on their property, and they became real friends of the expedition. Also to be thanked for their great help were professional archaeologists David Pendergast and Elizabeth Graham Pendergast (former commissioner of archaeology) of the Royal Ontario Museum expedition at Labna. We could not have done so well in the field without all of these archaeological colleagues. Some other colleagues such as Gordon Willey (Willey et al, 1965), Richard Leventhal, Mary Pohl, D. Freidal (Freidal, 1978) also lent us maps, notes, etc., and more important, gave of their knowledge of Belize. After Peru it was great to find so many archaeological friends.

But these are not all who helped us, for the local people on an official as well as an unofficial level were great. On the most official level was Harriot Topsey, the Archaeological Commissioner who gave us our permit along with some good advice. His assistant, Mark Gutchen of the United States Peace Corps, also was helpful, as were various people of the archaeology department staff, especially Miss Winnel Branche. Of course, we are grateful to the Minister of Trade, Industry, Cooperatives and Consumer Protection, the Honorable Guadalupe Pech, who signed our permit. We are especially thankful to another minister, The Honorable H. F. Flores of the Department of National Resources, and his assistant, Chief of Forestry Affairs, J. Rosado. They were both most cooperative and helpful with housing at Melinda and Savannah as well as with the use of other Forestry Department facilities. In fact, due to historic accident, we begged and borrowed from, and were always helped by, a number of forestry people, to whom we owe a great deal of thanks. Richard Belise at Melinda was our special friend and he must be thanked for making our survey so successful in the Stann Creek district, while Andrew Arnold did the same for us at Savannah. In fact, Ranger Bill Lockley even got us started by preparing Healy's truck for us. The forestry people looked after us like we were one of their own, but this seems to be the Belizean spirit, for we were assisted at every turn especially by Mr. Charles Wright, who discussed his soils book and general ecological things of Belize with us (Wright et al, 1959). Also, Leo Calstillo rented us equipment and gave sage advice; Jackie was our unbelievable river guide; David Cobb guided us to his fossil bone find; Mr. Samuel Oshon helped us dig on his land, and there were many, many more. In the same line, Roy Wade and Jorge Castillo of San Antonio guided us up and down the Rio Hondo. Again, we would like to thank them one and all; the success we had was because of their help.

While all of these people were great, the ones who did the basic work were the crew under MacNeish, Wilkerson, and Nelken-Terner. The most important one was Viki Velasco, who not only kept us from starving, but also did those 1,000-and-one managerial things that kept the expedition rolling. On a somewhat different level was Tom Emerson, "our student assistant." He was a great and compatible member of our four "man" team. One visitor from Andover, an amateur archaeologist, Ray Potvin, volunteered his service and strong back for the excavation of BAAR 35, and we would like to thank him for his help

and fine pictures. Also, for a brief time near the end, Elizabeth Ross was a student assistant, as was Jungle Jim Kules, and both really became members of our team, who did the impossible not only every day but twice on Sunday. How else could we have found 230 places with preceramic materials in the Maya lowland in less than ten weeks of work?

RECONNAISSANCE

Survey Methodology

The survey of the coastal river drainages of Belize was undertaken by boat and vehicle. In excess of 14,000 kilometers were covered by these means from one extreme of the country to the other. The focus throughout were the riverine and marine environments, which in coastal Veracruz (Wilkerson, 1974, 1975) and Chiapas (Voorhies, 1976) had significant Archaic populations. Access to such environments was not always direct or simple. The limited Belizean road network tends to run on the highest ground available back from the littoral, and tidal waterways are often shifting mazes of channels and vegetation. In many cases considerable distances had to be covered in order to find adequate launching sites from which we could reach the lower drainages.

The survey on land was undertaken with a 1979 Ford F-150 four-wheel drive, winch-equipped pick-up truck generously lent to us by Dr. Paul Healy of Trent University, Ontario, Canada. A 1973 Plymouth station wagon was used for moving excavation crews, hauling supplies, and for surveying during the latter portion of the season. Survey on water was mostly done with a 14-foot Boston whaler propelled by a 25-horsepower outboard motor. This boat was excellent for rivers and lagoons that could be approached through the road network. It was transported on a trailer and it was often launched and retrieved over steep banks by use of the winch. Its shallow draft enabled it to be maneuvered, often with considerable exertion, over dry season sand bars and rapids. Later in the season, when many of the more inaccessible rivers in the south had to be approached by sea, this was replaced by a 17-foot runabout with a 45-horsepower outboard.

Eventually this boat was superseded in the last rivers by a 33-foot dugout, or "dory" powered by a 40-horsepower outboard. This later craft, with a six-foot beam, three-foot high gunnels, and a capacity for nearly forty people, was probably not very distinct in design from the trading canoes sighted by Columbus in the Antilles. It was remarkably stable during inclement weather, as we found out when a storm caught us five miles out in the Caribbean. During the storm, we were able to continue our route downwind with extremely little yaw movement, and we safely crossed the bar of the Sarstoon despite the driving rain and mist. Such events must have been common for Archaic fishermen or later Mayan merchants in similar vessels.

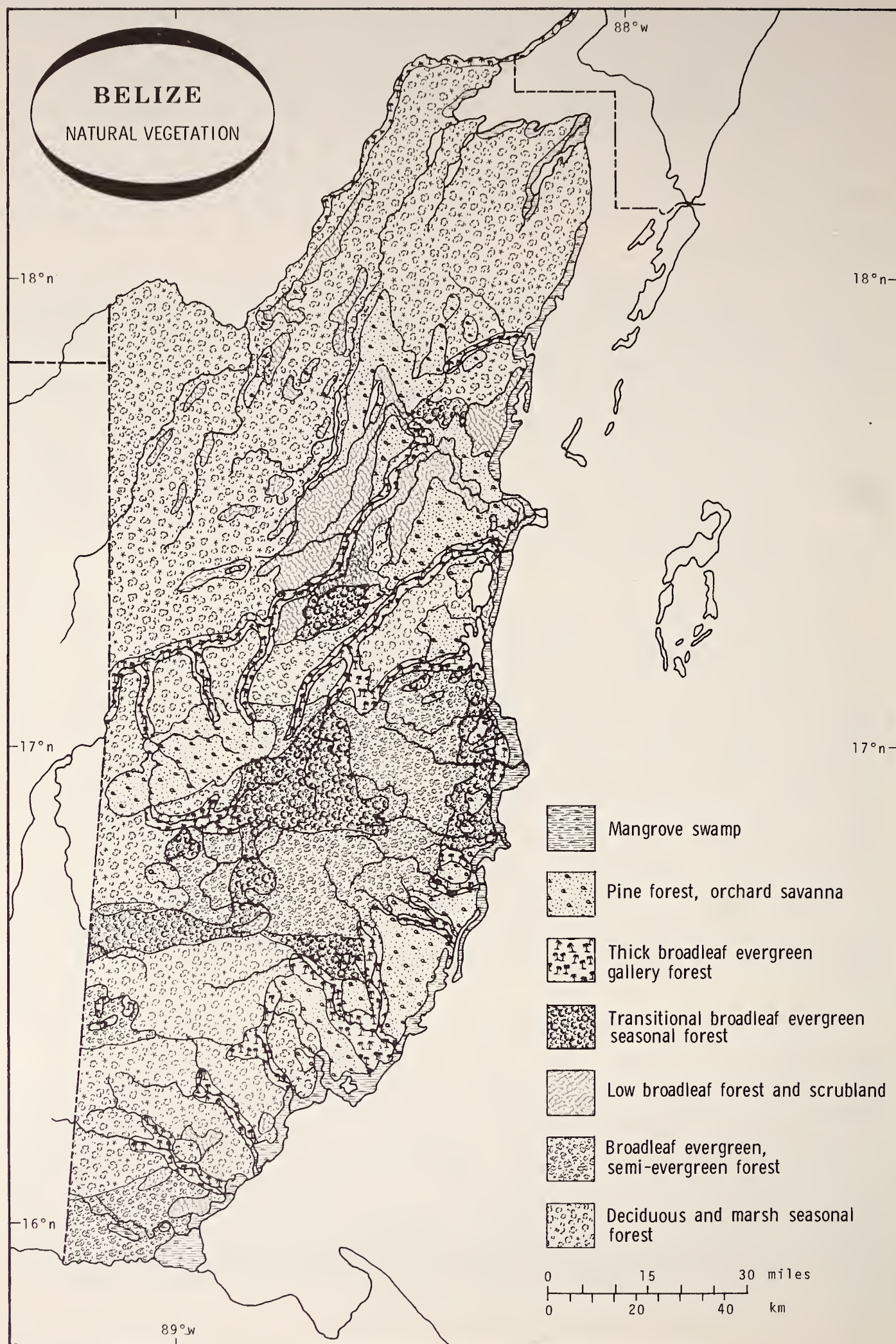


Fig. 2. General vegetational zones of Belize.

Local guides were retained wherever possible to aid in orientation and navigation. Some were excellent watermen, who greatly increased the effectiveness of the survey. The team, initially oriented together, was often split into two crews, one using the truck and the other using the boat. This measure allowed larger areas to be covered more rapidly.

Sites were located by examining erosional cuts, outcrops, blow-out areas, road gradings, plowed fields, local collections, and wading to points of "dry land" in the estuaries. Once some of the basics of Archaic settlement patterns were mastered, it was often possible to successfully predict site locations or clusters on the basis of topography and environment. Reference throughout the survey was to the 1:50,000 Belize series of maps published (1976) by the British Government through the Directorate of Overseas Surveys. All site coordinates were recorded in the 1,000-meter Universal Transverse Mercator Grid. This simple system allows any site to be located to within 100 meters through the use of eleven letters and digits.

Each site was also recorded on a basic data sheet (see Figure 3) in order to insure that comparable data would be available for the analysis of all sites. These sheets contained the majority of the data, which, with review of the artifacts, permitted selection of sites for testing. Artifacts were checked initially at the site and then taken back to the field lab for cleaning and analysis.

On some days no new sites were encountered; on other days as many as eleven were encountered. Surface specimens were collected and recorded by discrete units at medium or large sites. Densities, although varying greatly, were recorded along with site sizes and proved to be quite useful in estimating social units for given complexes.

The field laboratory was located in the library, which serves as a church, at the Melinda Forestry Station. Once washed, artifacts were labeled and examined there. The initial seriation was carried out with 625 artifacts from 40 major survey and excavation contexts. The resulting five complexes were spread out in chart form on the floor. The seriation was still undergoing refinement one Sunday when the local priest arrived for mass. After a tour of the numerous piles which contained hundreds of strange stones separated by chalk lines and cryptic looking graffiti, he kindly offered to hold services outside--cooperation in Belize is spontaneous and exceptional!

When the lab was closed at the end of the season, all artifacts were boxed and placed under government care. All through the season the office of the Archaeological Commission was constantly kept apprised of procedures, activities, and preliminary results. The first written summary of the reconnaissance was submitted to the Commission within two weeks of the conclusion of the season.

<u>B.A.A.R.</u> Site Form		
Number	Name	Date
Longitude	Latitude	Map Number
Description		
Length	Width	Depth
Topography		
Soil		
Vegetation		
Nearest Water		
Artifacts	Bag Numbers	
Excavation Potential		
Owner	Address	
Attitude Toward Excavation		
Institution	Address	
Permit & Number	Discoverer	
Access		
Site Sketch on Back		

Fig. 3. The BAAR site survey form.

The Survey

There are six administrative districts in Belize, and the BAAR Project explored sites in all six. Beginning in the north with the Orange Walk Corozal Districts and moving southward to Belize, Cayo, and Stann Creek before ending the season in Toledo, a total of 161 sites and 70 finds were located and recorded by the end of the project.

Because of the distances involved, several successive bases were used by the survey team. From February 21 to March 20, the team shared camp facilities with the Cuello Project outside Orange Walk. This served as a point of departure for examination of the area from the northern Belize border of the Rio Hondo to the north bank of the Belize River in the central portion of the country. The project then moved to the Melinda Forestry Station outside Dangriga. From here reconnaissance was directed to the area from the Belize River on the north to the Sittee drainage on the south. Test excavations in the Belize, Sibun, and Southern Lagoon were also carried out from here with the occasional use of additional facilities in Hattisville and Freetown. For two weeks in May the project moved to the Savannah Forestry Station to examine the area from the Sittee to the drainage of the Monkey River. Another few days were spent in Punta Gorda to cover the coast between "Port Honduras" and the Sarstoon before moving back to Melinda. The project closed its lab and terminated its field work at the very end of May.

The majority of the field effort was directed toward the Orange Walk, Belize, and Stann Creek districts, where 86 percent of the sites were encountered. The environments and sites of the various districts are described briefly in the following paragraphs.

Corozal District

This northernmost district of Belize is also the driest, with 1,000 to 1,700 mm of rain annually. The terrain varies from flat to slightly undulating, with low limestone ridges stretching toward the northeast. Vegetation varies from mangrove swamps in the lower riverine and estuarine zones to thorn forest and savannah at higher elevations. Sugar cane is the major product of the region, and where soils are appropriate, much land is given over to its cultivation. Survey in this district was restricted to Progreso Lagoon, the Rio Hondo, and Four Mile Lagoon.

Progreso Lagoon

Progreso Lagoon is part of a series of streams and lagoons which flow toward the northeast between low ridges, to the larger New River and Rio Hondo to the west. Although the interconnecting Cocos Lagoon may be essentially brackish, the lagoon itself is mostly freshwater. It is surrounded by gallery and thorn forest on the east, and corn plots, second growth, and cane fields on the west. Nine sites were located by boat on the banks of the lagoon or by vehicle on the higher terraces back from the water. The two preceramic sites (BAAR 3

and 6) were located on a point projecting into the lagoon and in a sheltered cave. Ceramic sites were of small size when located on or very near the lagoon. However, the two (BAAR 9 and 10) on top of the ridge to the west were much larger, with mound structures, and, in one instance, a Chultun. These sites are located about two kilometers from the lagoon, only slightly nearer to the lagoon than to the New River. Such higher and environmentally "strategic" locations are typical of the sites of later time periods.

Four Mile Lagoon - Rio Hondo

Survey activities along these waterways were restricted to preliminary examination of the banks of Four Mile Lagoon and the Rio Hondo by boat. This very brief reconnaissance did not locate any sites on these features within the Corozal District. Few erosional cuts were visible on the generally lower and mangrove-covered Belizean side of the river. Vegetation back from the river varied from swamp-land to thorn forest and cane fields, depending upon height and drainage. The Mexican side was not surveyed, but large erosional cuts and high ground suggest future survey would be warranted.

Orange Walk District

The Orange Walk District is large, with many varied environments and vegetation types. Rainfall ranges from a low of nearly 1,000 mm in some areas to a high of 2,500 mm in the extreme northwestern portion of the district. The low topography and vegetation in the northeast is much the same as is described for the Corozal District. The south and west grades into rain forest and broken limestone hills. Sugar cane plantations predominate in the northeast and lumbering operations to the southwest. Some cattle grazing occurs near Rio Hondo, and moderate farming operations are undertaken by Mennonite communities at various points near the waterways. Survey endeavors in this district focused on the Rio Hondo and the New River.

Rio Hondo

The survey of this river began in the Corozal District and was continued by boat and vehicle. The river was initially navigated upstream to San Antonio on Albion Island, and later downstream from Blue Creek Village to the same point. River banks accessible by vehicle in the same drainage were traced as far west as Belize's junction area with Guatemala and Mexico.

The river itself is brackish far inland, with mangroves present as far as sixty-five kilometers upstream from the mouth. Marine fauna, including a three-meter shark, are taken at least this far from the sea. In general, the higher banks, many with erosional cuts, make the Mexican side of the river far more propitious for locating Archaic sites than the Belize side. A total of five sites and one find were encountered along the lower banks of the river. One site near Gold Button Creek plus some bifaces of unknown provenance collected by an inhabitant of San Roman were the only preceramic evidence



Fig. 4. Dr. MacNeish finding a stone bowl in sites BAAR 31W on the Lowe Ranch.

found. The others date to ceramic times.

It should be indicated that the preceramic site at Gold Button was not explored because of the emphatic opposition of the landowner, one Mr. Chester Carver. Mr. Carver, an American who is engaged in wholesale clearcutting of his huge ranch, was the only person of the hundreds of landowners we dealt with throughout Belize who objected to our even walking on his land. Cooperation with the survey at all levels and in all parts of the country was excellent, with this one unfortunate exception.

New River

Much like the Rio Hondo, this river is brackish with mangroves far upstream at least seventy kilometers. The 47 km length of banks from Orange Walk to Irish Creek on New River Lagoon were surveyed by boat and vehicle. Ten sites were found along the river; three (BAAR 11, 19, 20) of small size were preceramic or had preceramic occupations. Some sites were on low terraces or on former islands in the river suitable for seasonal habitation. Others, on the lagoon particularly, were on higher terrace lines well above wet season flooding.

Belize District

Survey in this district was concentrated first on the higher terrace savannahs back from the northern margin of the Belize River, the largest in the country. Later both margins of the Sibun River were surveyed, as well as all shores and tributaries of the Northern and Southern Lagoons. Time did not permit examination of many of the waterways, particularly north of Belize City.

Environmentally, the district is quite diverse, ranging from extensive mangrove swamps near the coast to sharply rising limestone hills with hardwood forests in the southwest. Rainfall is 10 to 100 inches annually over much of the district, but reaches 130 inches in the south. There is considerable modification of vegetation due to farming, lumbering, quarrying and cattle grazing activities in the immediate vicinity of the Belize and Sibun Rivers. Nevertheless, sites were found throughout the district, including stratified preceramic sites located near Sand Hill and in high cut banks of the Sibun.

Northern Belize District

This portion of the district is essentially a broad coastal plain cut by the Belize River. Six generally low preceramic sites were located in the marshy savannah areas approximately 10 m high, just north of the Belize River and east of its tributary Mexico Creek. Most (BAAR Nos. 31, 32, 33, 34, 35) were in pastureland and one (BAAR 26) was in a modern road quarry area. All tended to be on slight rises with occasional oak clusters and pines. Some appeared to be chert quarries, while others were in proximity to sink holes, which



Fig. 5. (upper) MacNeish and Ross excavating square S 556E 71 at BAAR 35E as seen from the east.

(lower) BAAR 35W as seen from the west.

may have been year-round sources of water. While modern disturbance is extensive in some cases, particularly at Sand Hill (BAAR 26), several offer excellent stratigraphic potential.

Further survey will be necessary in this area in order to locate additional sites, which may be temporally linked with the quarry sites around Sand Hill. Nearby Jones Lagoon as well as the cuts of the Belize River will also require survey. Interestingly enough, all these sites are within a few kilometers of Little Fall on the Belize, a natural focus point on this river flowing from the Peten.

Southern Belize

(Sibun River, Northern Lagoon, Southern Lagoon, Manatee River)

The southern portion of the Belize District is the beginning of the rapid constriction of the coastal plain. Starting in the Maya Mountains and Peccary Hills, the Sibun River flows northward until free of the forested hills before meandering eastward through savannahs and low swampland to the Caribbean. A general land rise and a large volume of water, which is augmented considerably in the wet season, has made for very high cut banks along much of the course. By Freetown on the lower Sibun there are 3 m banks, and by Gracy Rock, about 20 km upstream, they are minimally 12 m high. At that point the flood stage of the river easily obtains 10 m heights above the dry season water level. The canyon-like banks of this upper portion of the river made survey difficult but cuts were reviewed to 4 km past Gracy Rock Bank, the maximum point of dry season navigation.

Eight sites and five finds were found in cuts along the Sibun River. Most were found along the upper tidal portions of the river, well away from the more brackish mangrove areas. Sites and finds with ceramics predominated, but five probable preceramic sites were located upstream from Freetown. One (BAAR 70) proved upon testing to be inconclusive and highly disturbed in Classic times, but another (BAAR 71) was deeply stratified. Here ceramic levels of Classic and Formative date overlaid lithic deposits of the early Sand Hill complex. A nearby forested Classic Period (BAAR 73) of moderate size contained, in a small plaza between mounds, two plain stelae.

Downstream from Freetown only ceramic sites were encountered and the early ones of those were within a 1.5 km distance. A preliminary, and albeit cursory, examination of topographic features stretching southward from the present course of the Sibun suggested an intriguing explanation. Residual scars and meanders in that low region indicate that the river once flowed into the extreme northern end of Northern Lagoon. Further examination of the lagoon showed a deltaic outgrading into Southern Lagoon, today straddled by Main Creek. As today the complete silting and stoppage of the creek is in constant danger, and there is little current in the Northern Lagoon, its presence implies a much greater current and course in former times. This is extremely likely to be temporally coeval with the Sibun flowing into the Lagoon.

The importance of this in terms of cultural ecology is that the Sibun River and the two lagoons have formed not only a single hydrological unit, but they may also have formed cultural units at various times in the past. Settlement patterns of Sand Hill and Progreso were encountered in this natural waterway, by far the most productive drainage surveyed during the field season. This was the area selected before the research began as most likely to have the compressed, convergent ecological zones about riverine and estuarine regions, which our work in Veracruz had shown to be favored by Archaic peoples (Wilkinson, 1974, 1975, in press).

Along the shores and islands of Northern Lagoon, 21 sites and 13 finds were located. Most were situated in the south hill of this large lagoon (approximately 39 km² in size) where the water is more brackish. Many of the sites are on slight rises of ground which once were estuarine islands and are now surrounded by swampland. The majority were readily accessible by boat, but a few were screened by mangroves and had to be reached by wading. The presence of extensive mangroves in the northeastern portion of the Lagoon may be a recent phenomenon. Five Mile Canal, an extension of the Bardon Canal leading southwestward from Belize City, empties water with a high saline content from Hardover Creek, Jones Lagoon and the present lower Sibun into the area. Before the construction of the canal this portion of the lagoon would have been predominantly fresh water.

Logging has removed most of the hardwoods on the higher ground back from the western shore, leaving much second growth around savannah areas. This shore, in spite of being exposed to greater erosion by wind and wave action, had 8 sites along its southern extremity. Perhaps because of its modest height, this is also the location of the now largely abandoned settlement of Watters Bank. Historic house remains were found in the water of the Lagoon off practically every point or slight rise. Most appear to be of nineteenth and early twentieth century date and attest to recent population movement in coastal Belize. Two tributaries of the lagoon, Freshwater Creek and Tom Tom Creek, were explored but had few erosional cuts, and no sites were recorded along their banks.

Fishing today is still plentiful in both ends of the lagoon, especially by Main Creek and off the canal in the northeast. The latter also had a concentration of four sites and two finds. Wagner Lagoon, an estuarine embankment not far from Main Creek, had two sites and a find on small rises along the present shore. Game is also plentiful at some points around the lagoon--as attested by a tapir which ran through the camp and startled the survey crew one night.

Vegetation in Southern Lagoon is similar to that of Northern Lagoon, although Southern Lagoon has a higher salt content, particularly in its southern half. Approximately 32 km in size, including appendages, it is smaller than its neighbor. Nevertheless, more sites and finds were found here than on any other body of water: 30 sites and 22 finds in all.

Access to sites here is almost totally by boat. Many in the windward western portion of the lagoon were situated on very low rises of land that were once islands. Surrounded by swampland, or occasionally seasonally flooded savannah, these locations were not always obvious at first observation. Higher points of land projecting into the lagoon along this side were almost always altered by wave action. Artifacts at these locations were generally to be found on the shallow lagoon bottoms, the sites themselves having been washed away. At this point our survey crew began to develop sub-aquatic techniques and senses that allowed us to locate various of these "former" sites.

Blow-out sites were common on former islands, now joined together as a low peninsula in the northern portion of the lagoon. The shore of the northwestern sector of the lagoon had numerous sites on higher reaches of lands which once were islands five to ten hectares in size. These were often screened by mangroves and tidal pans and had to be approached by wading and then were criss-crossed for blow-out or erosion evidence.

The southern saltier portion of the lagoon had fewer sites, primarily along its more protected eastern and southern shores. The eastern group of sites were also once on islands, while the southernmost were on, or near, the shores of their time period. Two in fact appear to be on rises which may have been much earlier marine terraces. The present day village of Gales Point on a narrow two km long projection into the lagoon, may also have been occupied in Archaic times but it is highly disturbed. The low savannah areas, which are crossed by small seasonal and permanent streams, and which stretch for four kilometers south of the village, produced one site but will probably produce more in a more extended future survey.

The major fresh water source for the lagoon is the Manatee River. This short, tidal river is navigable for about 6 km in the dry season and has high cut banks upstream from the mangrove zone. Today it empties into the lagoon at "the Bight" but it originally extended through a large deltaic island network which is called Harley Point. While Archaic and ceramic sites were found back from the northern margins of the former delta (Western Lagoon) only one historic site was located on the river. Nearly annual flooding may have precluded extensive use of the immediate banks.

The Manatee River does still have manatees. The prolongation of the river to the Caribbean, sometimes called the Bar River, is the only exit to the sea for Southern and Northern Lagoons. Large mangrove swamps and low islands of recent origin border its course. On preliminary inspection no sites were found here.

Historic sites were not common throughout the Lagoons. Access to both Northern Lagoon and Southern Lagoon is via the canals from Belize City or the Sibun and the road from Melinda to Gales Point. Both were used during the survey.



Fig. 6. (upper) The Belizean Queen at BAAR 43 in western Lagoon.

(lower) BAAR 71, a river bank with pre-ceramics indicated in center of picture under a layer of sherds in the top 1 meter of the bank.

Cayo District

Little time was devoted to this district during the season, as emphasis was placed on the lower riverine and estuarine environments. One location was visited near Carmelita where a large partially fossilized femur had been found in the early 1960's. The femur is probably a proboscidian rather than a megatherium as originally thought. A review of the gravels at the base of a 10 m bank along the Belize River produced no new material, but future reviews of adjoining cuts are warranted.

Stann Creek District

The coastal plain of this district is remarkably uniform environmentally, and, with its narrow, compressed coastal plain, it had abundant sites, 1m in all. Two zones, however, could be provisionally identified: on the north, the Mullins, North Stann Creek, Sitter and South Stann Creek drainages, and on the south, the Mango Creek and Big Creek drainages.

The northern zone has a series of rapidly falling rivers of modest size with considerable terrace cutting. Flash flooding is common, and courses are subject to constant and sometimes substantial modification. Ground level around this region is rising faster than sea level. Soils are largely clayish. Vegetation is mostly pine savannah except for gallery forest in the vicinity of the larger watercourses.

Within the last fifty years several modifications of the environment have affected site conditions. Large portions of the savannahs between North Stann Creek and Southern Lagoon were converted to pine forests by government planting programs. The development first of the banana trade and then of the international citrus market, led to the clearing of the hardwoods on the terraces of the North Stann Creek Valley. To lesser degrees pine planting and citrus growing have also modified some areas between North Stann Creek and the Sittee drainage. As both the pine and industrialized fruit operations involved clearcutting and plowing, most of the open preceramic archaeological sites in these areas are disturbed and today have little reliable stratigraphy.

The southern zone of the Stann Creek District is essentially a continuation of the northern portion of the adjacent Toledo District. With sea level apparently rising faster than ground level, the lower drainages of streams such as Mango Creek and Big Creek are low and marshy with extensive mangrove penetration. The coastal plain is the widest east to west in the district.

Preceramic site distribution in the northern zone is along (1) the heights of the low savannahs back from the Southern Lagoon, (2) the headwaters of seasonal tributaries of the Mullins River and Salt

Lagoon, especially near the first foothills westward from the coast, (3) small rises near sink holes, and (4) older terrace lines back from the present river courses.

In the southern zone preceramic sites are found in all of the above locations but they were especially clustered around sink holes just back from seasonal streams. In addition they were found on the tops of the the present terraces in the middle and lower drainages. Ceramic sites were also encountered in such locations. The use of such exposed points is probably a reflection of the lesser occurrence of flash flooding in the drowned drainages of the southern zone.

North Zone

Mullins River -- North Stann Creek

This is the area of the narrowest coastal plain in Belize. Numerous sites were found there, and many more would be visible but for the extensive planted pine forests. Most of the survey in these two drainages was undertaken by vehicle along forestry roads. In spite of low water, however, Mullins River was surveyed by boat up to a point just west of the new Mullins River Town, and Stann Creek was briefly inspected, although it was too shallow for effective survey. As a general rule larger sites from the latter portion of the Archaic were found toward Southern Lagoon, and smaller sites, seemingly from the middle of the Archaic, were located in the present forests. One possibly Paleo-Indian site was found on a relatively sharp rise by the first foothills. Stann Creek in the vicinity of the Melinda Forestry Station was also reviewed, and one site was located on a rise back from the present banks.

Sitte River -- South Stann Creek

In spite of large vertical cuts up to eight meters above water level, few prehistoric sites were found along the present course of the lower Sittee. Although many rapids had to be negotiated it was possible to survey from the boat from a point west of the Southern Highway bridge at Kendal. Large sites from ceramic times were found at that point and appeared to fit a pattern whereby the larger Classic Period sites in southern Belize were found on or among the first foothills of the Maya Mountains but in direct proximity to navigable watercourses. South Stann Creek was viewed from the bank for the first two kilometers and by vehicle in the vicinity of the Southern Highway. No sites were encountered there but time and dense thickets made a complete review impossible this season.

Southern Zone

Mango Creek -- Big Creek

The greater Mango Creek drainage, including its tributaries Jenkins Creek and Silver Creek, was investigated by boat to the points

of maximum navigation. Most sites, however, were found by vehicle in the vicinity of sink holes on the low ridges just east of the foothills. Sites were also numerous on low ridges, between two parallel tributaries. Their placement usually suggested equal access to both water sources. A few sites, both preceramic and ceramic, were encountered on the terraces of the lower affluents of the Mango Creek system. Thick mangrove cover made it difficult to ascertain site locations near Placentia Lagoon at the mouth of the Mango Creek. Placentia Lagoon was not surveyed this season. Site distribution along Big Creek followed the same pattern as Mango Creek. Areas between the two creeks, which were originally savannah like those presently south of Big Creek, had been planted with pine, and this made it difficult to locate sites, but a few were found on seasonal feeders of Big Creek. There is a smooth continuity of site locations between the southern zone of the Stann Creek District and the northern Zone of the Toledo District.

Toledo District

This district can be divided into two distinct areas: the Monkey, Stennis, and Deep River drainages on the north, and the Golden Stream, Indian, Moho, Temash, and Sarstoon drainages on the south. In spite of relatively similar rainfall patterns (130 - 160 inches a year in the north and over 160 in the south) these areas are environmentally distinct.

The northern area is essentially a continuation of the prevailing conditions in the Stann Creek District. Unlike most of the river courses there, however, the northern deltaic portion of Toledo District appears to have drowned drainages and little deltaic buildup. The rivers are for the most part, however, deep with mangroves, and they extend far inland along the banks. Gallery forest is common along the larger river and, in some instances, extremely dense. The soil back from the rivers supports savannah conditions with variable ground cover.

The southern area can be split into two subareas: Golden Stream - Rio Grande - Orange Point on the north and the Moho, Temash, and Sarstoon drainages on the south. The upper subarea, which is slightly drier, has some riverine depositional activity and some savannah environments inland. The southern area is largely rain forest with slow moving tidal rivers.

Although considerably less time was spent here than in other districts a total of 14 sites and 5 finds were encountered in the Toledo District. Most were from the northern area in the savannahs. In general, preceramic sites were located: (1) on the earlier terraces of rivers now separating the gallery forests from the savannah zones, (2) at the heads of secondary seasonal tributaries of the rivers, (3) on rises immediate to sink holes with dry season retention, (4) on chert sources in proximity to streams or sink holes, and (5) on low narrow ridges between the upper portion of parallel running creeks, especially where encinals (oak clusters) and sand

dune activity occurred. Ceramic sites were found: (1) back from the existing terraces, probably to avoid the flash flooding so common in the region, (2) along highly compressed drainages, such as the Stennis, where rapid flooding was not a seasonal factor (BAAR 114, 115, 116), (3) in reasonably stable lagoons adjacent to larger rivers, and (4) along small year-round tributaries that insured a constant water supply.

North Zone

Stennis River -- Indian Hill Lagoon

The Stennis River was surveyed by water up to the entry point of Left Hand Branch and Right Hand Branch, and only ceramic sites (BAAR 114, 115, 116) were found in this portion. All were at the water's edge, two behind mangroves. Preceramic sites were located on high banks in bends 3.5 km upstream on Left Hand Branch. Two (BAAR 124 and 126) of the three sites clustering about that point may be suitable for excavation by virtue of density and stratigraphy. All were located on the highest portion of the bank, which may have represented the interface between the savannah and gallery vegetation zones. BAAR 124 may have been in an encinal. Only the northern portion of the shallow Indian Hill Lagoon was surveyed. A ceramic site was found near the mouth. A complete survey of the lower Stennis as well as the higher savannahs just back from the lagoon is likely to produce preceramic evidence.

Monkey River -- Pine Ridge Creek

Monkey River is characterized by dense gallery forest and secondary growth on the terrace soils. Meander and flood cuts were culturally sterile, as were a limited number of transcuts attempted along the north bank. The river was surveyed to the point of maximum dry season navigation at the juncture of Bladen and Swacey Branches. Portions of the middle drainage accessible from the Southern Highway were partially surveyed by vehicle. The region between the branches known as the Stopper, particularly in the vicinity of the high ground called Las Lomitas, presents considerable potential but was not surveyed during this season due to time considerations. A site (BAAR 157) on a seasonal western tributary of the Bladen Branch, however, was found in pine forest. In spite of high artifact density, disturbance from forestry activities lessens excavation potential in this area. The low savannah area just to the north of Monkey River was surveyed, with access provided by the Department of Forestry's new Monkey River Town road. A preceramic site was found on the high terrace back from the river in the savannah just behind the gallery forest. Three other sites were found on the savannah on small tributaries of the Pine Ridge Creek. The one other preceramic site was by a seasonal tributary.

Deep River

The lower, navigable portion of this river was not surveyed

Complex	Stream + Sand Ridge	Sink hole + Sand Ridge	Estuarine Island	High River Terrace	Stream Terrace	Marine Terrace/ Shore	Low Riverine Terrace	Cove Fresh Water Lagoon	Point Fresh Water Lagoon	Sand Ridge + Estuary	TOTAL
Progreso	6	2	11	3	2	1	?	2	1	1	29
Melinda	5	4	8	?	2	5	2	1			27
Belize	9	7	1	1	2						20
Sand Hill	4	8	4	1							17
Lowe-Ha	4	1									5
Total	28	22	24	5	6	6	2	3	1	1	98

Table 1. Site distribution by environmental zones.

during this season. The upper portion, available from Southern Highway, was reviewed in a preliminary fashion. On the rise separating the Deep River tributary of Big Dry Creek from Bladden Branch, two (BAAR 158 and 159) preceramic sites were located focusing on a sink hole. One (BAAR 158) is potentially of considerable importance as it contains the remains of a large exploited chert source. Portions of the site date to the Belize Stone Bowl complex while other portions may be earlier still. Near the Machuca Creek, a tributary of Deep River, another preceramic site (BAAR 160) of unknown but potentially large extent was encountered. Further survey throughout the drainage is required.

Southern Zone

Golden Stream -- Middle River -- Seven Hills Creek

These three small and clearly related drainages were not surveyed this season.

Moho River

The first three kilometers of the river were examined but no site was encountered. An initial vehicle search near the Black Creek tributary also did not produce any visible site.

Temash River

The first five kilometers of the Temash were reviewed. A single ceramic find was located on the north bank.

Sarstoon River

The large island near the mouth of the river was given a preliminary examination. Weather conditions and time available did not permit close examination. Further survey is necessary.

COASTAL ENVIRONMENTS

During the course of survey, sites were found in ten varied coastal environments. These categories used here are preliminary and, at this stage of analysis, they are roughly lumped and defined. Nevertheless, they greatly aid in the understanding of settlement patterns and resource use. They are defined briefly as follows:

1. Sink Hole and Sand Ridge. Natural solution formed sink holes are common throughout coastal Belize, particularly in the "middle" drainages of the rivers (i.e. the area between the maximum penetration of salt water and the first mountain). Most are found back on the drier flanks of the drainages where streams are frequently seasonal and water disappears underground in the Karst landscape. Many of the sinks are reliable year-round sources of water and are today found amid savannah or, somewhat less often, pine ridge vegetation. The rims of the sinks may support various hardwood trees and

palms and, quite naturally, are the focus points for many animals and birds.

2. Stream and Sand Ridge. In most cases these locations are found on the upper reaches of feeder streams to tributaries in the middle drainages. The majority of the streams are seasonal, cutting deep banks at times during the rainy season (June - December). Sites are usually situated parallel to the streams but may have extensions down to the watercourses. Vegetation is normally of the "pine ridge" or "broken pine ridge" variety. Encinals are often found in the vicinity of sites in this environment. This could be a significant association, since acorns might have been harvested in such areas from the peak of the rainy season (September) through the fall.

3. Estuarine Island. There will certainly be many future refinements of this category. Here, however, it can be defined as ground above the high tide marsh in coastal lagoons or deltaic portions of rivers surrounded by brackish water. Such locations provide ready access to both fresh water and salt water resources, as well as some hunting. Vegetation varies from purely mangrove (usually red mangrove) to mangrove screens masking miniature sand ridges with savannah conditions or, less frequently, pine ridge conditions. Some few of the larger islands have sink holes in which fresh water collects. Today, with rising land forms along most of the Belize coast, many of the islands are anchored to lagoon shores by swamp-land and silted passages. The same is true of many purely deltaic formations where islands are now captured by terrace formation.

4. High River Terrace. Locations recorded to date in this environment are generally at one of two points in a river course: (1) at or very near the point of maximum salt penetration and tidal movement, or (2) where hills severely constrict terrace widths in the middle drainage. The former location permits easy access to both fresh and salt water resources, the river terrace itself, and, often, higher savannah areas back from the terrace. The latter location provides direct access to riverine resources but also to nearby pine ridge and, in some cases, deciduous forests on hill slopes. Both types of locations today are most frequently cleared farm and pastureland but are very likely to have been gallery forest until this century. In both cases these terraces are located above all but the highest floods. Flooding is extremely common during the rainy season in central and southern Belize.

5. Stream Terrace. This environment always focuses on a year-round tributary stream of the middle drainages. Generally the banks of the selected locations are sufficiently high to be above flood stage. In all instances recorded so far the streams support sparse gallery forest and have drier savannah or pine ridge vegetation beginning but a few meters back from the narrow stream terrace. When observed in the late dry season the sites were often found just back from small pools formed by the lowered streams.

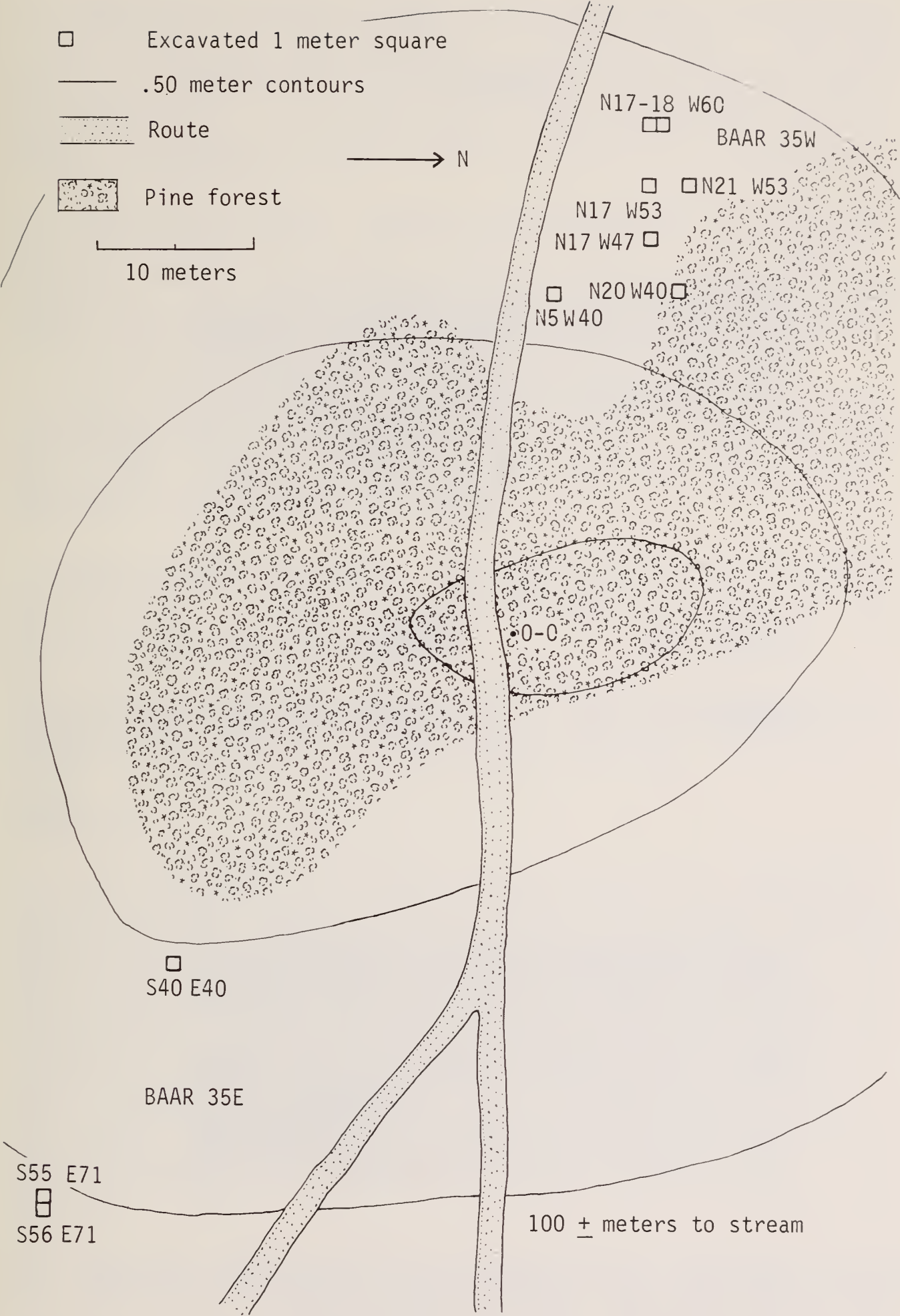


Fig. 7. Sketch map of BAAR 35 on Lowe Ranch with areas of test indicated.

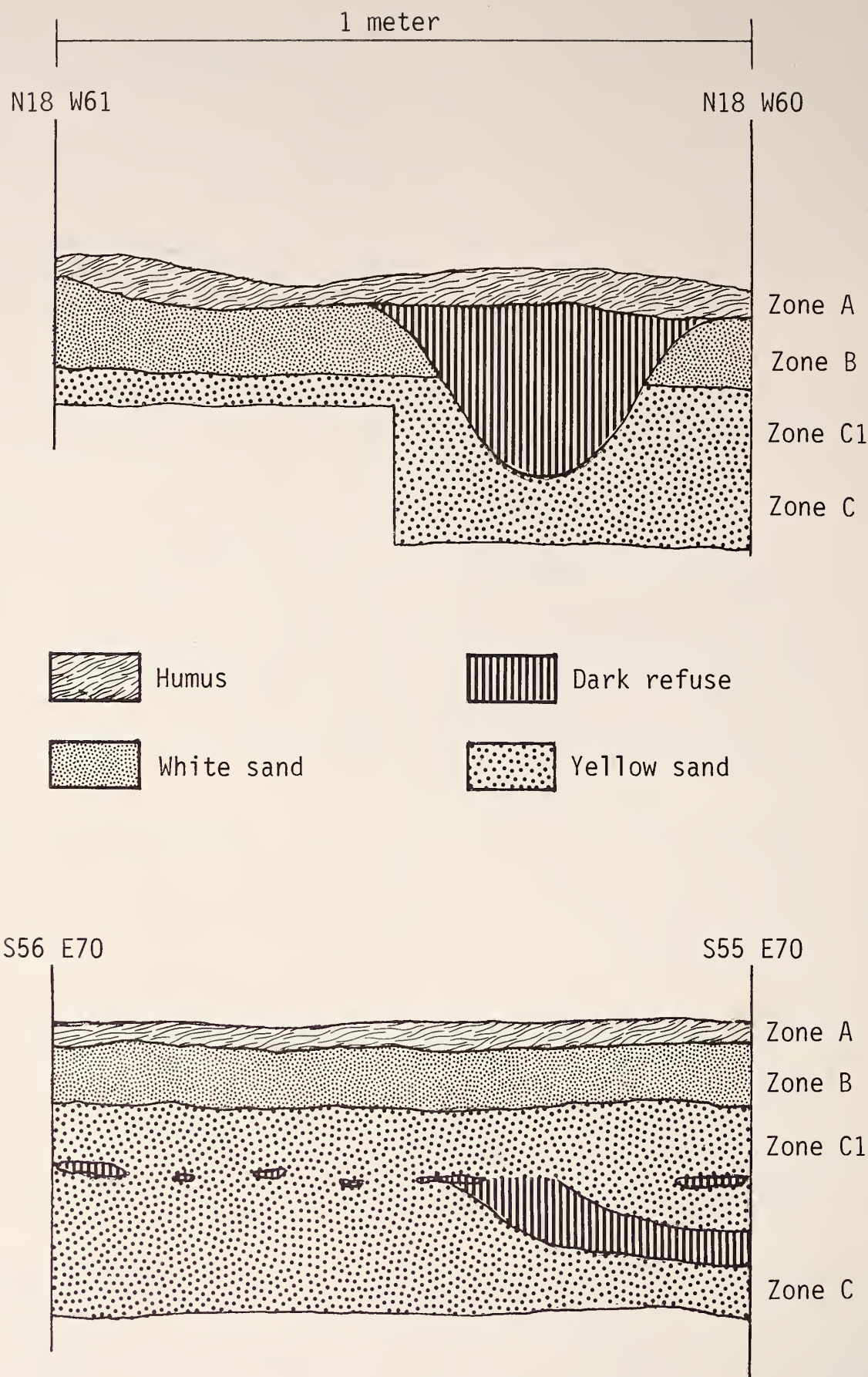


Fig. 8. Profile of test in BAAR 35--upper north wall of square N 15W 6 and lower west wall of square S 556E 71.

6. Former Marine Terrace - Shore. This environment is essentially a raised sandy elevation near a salt or brackish lagoon. Like many of the environments mentioned above, its advantages lie in its secure location and proximity to differing resource areas. The two examples encountered in the present survey allow direct access both to a lagoon and, secondarily, in the opposite direction to fresh water streams and marsh savannah.
7. Low Riverine Terrace. Exposed environments such as this are secure from flooding only in the dry season. The one site recorded from this habitat is back from a tidal portion of a river lined with mangroves. The terrace itself is cleared today but supported gallery forest until recently. The environment is propitious for seasonal fishing and hunting.
8. Sand Ridge near Estuary. Such an environment allows the exploitation of estuarine resources as well as those of the generally dry sand ridges. Vegetation at water's edge consists of mangroves and some hardwoods, while the ridge itself may have oaks and savannah habitats.
9. Cove on Fresh Water Lagoon. Providing a sheltered shoreline and particular fish resources this environment allows an aquatic focus. Our one example originally may have had a small hardwood forest near the lagoon and scrub forest beyond.
10. Point on Fresh Water Lagoon. Points provide distinct fishing conditions and prolonged shore footage for utilization. Vegetation today has been cleared on our one example except for the planted palms, but originally would have been similar to #9.

CHRONOLOGY

Obviously, the major purpose of the reconnaissance was to find sites for excavation, and of prime importance was the discovery of stratified sites, so that a sequence could be established. Although many of the sites (about 70 of the 160) were found in May after MacNeish and Nelken-Terner had returned home, it seemed advisable for them, with limited help, to test some of the best of the stratified sites in April, so that with the information from those and the seriation of artifacts from the first 90 survey sites, a tentative sequence could be established that could be tentatively cross-dated with preceramic remains from other parts of Mesoamerica. Further, the testing could help to determine what the major excavation program would be in future seasons.

BAAR 35

Two sites, BAAR 35 and 31, on the property of David Lowe in Sand Hill, showed promise of future results from excavation and gave us a few artifacts from different complexes. We found our earliest materials stratigraphically below two kinds of later complexes. In BAAR 35, the site itself was situated on a sand ridge just west of a

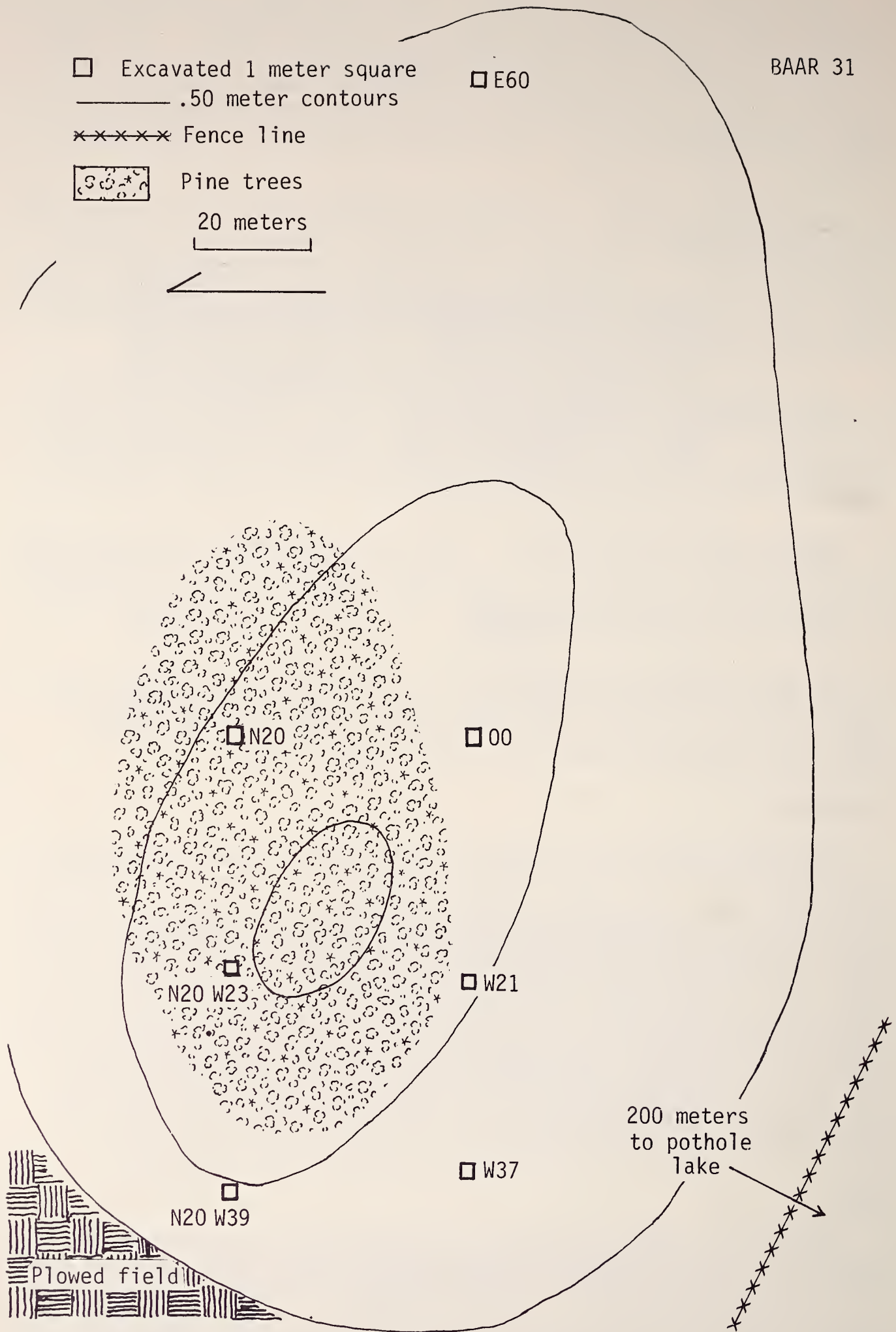


Fig. 9 Sketch map of BAAR 31 with areas of test indicated.

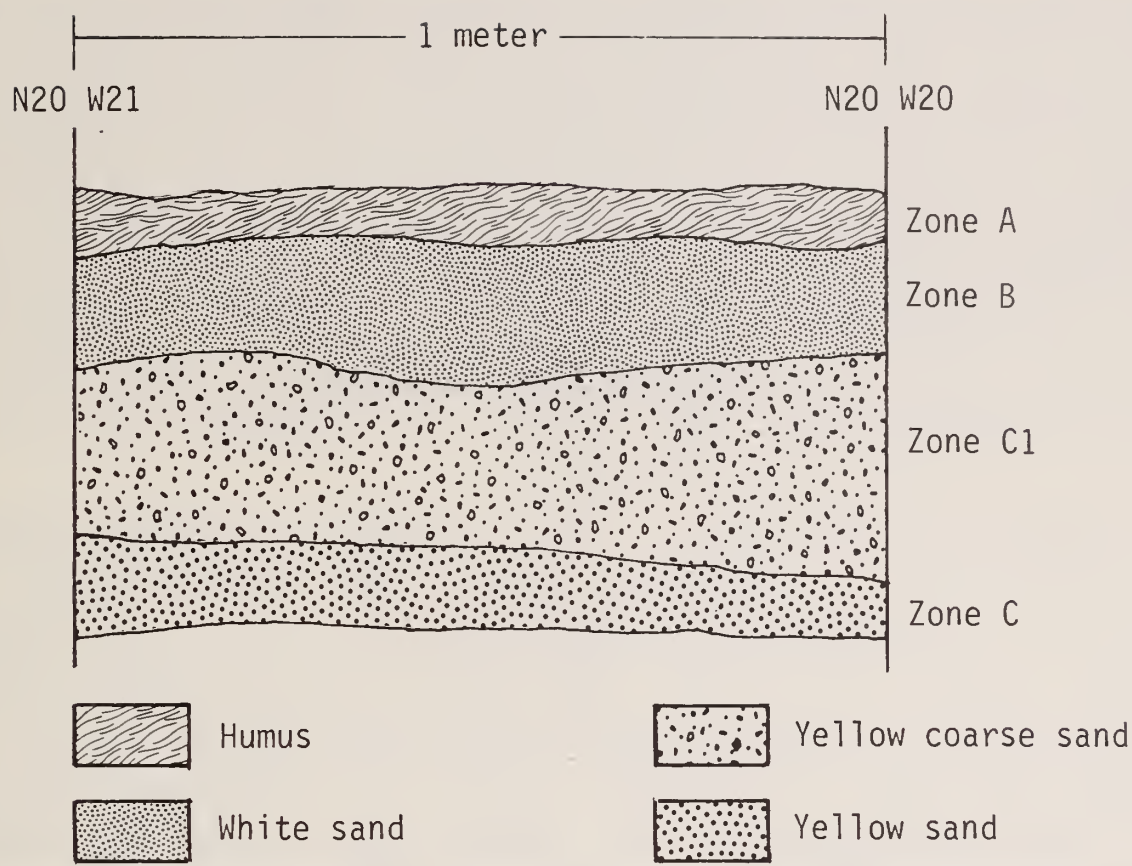


Fig. 10. (upper) Profile of south wall in square N 20W.
(lower) Looking at site BAAR 31W from the east.

small stream which was probably in existence when the site was first occupied. Our tests and surface collections indicated that it covered a huge area, roughly 60 meters east to west and 100 meters north to south. On the first survey test it was revealed that in fact it consisted of at least two separate sites--each about 30 by 50 meters. We called the two BAAR 35E (east) and BAAR 35W (west). We laid out a general grid plan along the cardinal axis and then put in a series of ten 1 m tests in the areas where surface collections showed promise. Our crew was limited: MacNeish, Nelken-Terner, Potvin, Ross, and Kules. Our work days were long, without enough hours for digging, for we commuted from Hatiesville across the Burrel Boom ferry and back every day. Further, our equipment was of the most basic sort, as were our lunches.

In BAAR 35E, two adjacent squares, S56E71 and S55E71, had very nice stratigraphy. In the humus, zone A, was a conical pestle, a fragment of a tecomate-shaped stone bowl, and a side-worked macroblade--all diagnostic of the Belize complex--as well as five side scrapers. Surface collection from this portion of the site, which probably pertains to zone A, had not only these diagnostics but also two snowshoe-shaped end scrapers, a muller, an unworked macroblade, two adze-like gouges, a hoe-like chopper, and a hemispherical stone bowl. Under the humus was a 20 cm thick layer of gray sand, zone B, which contained not only chips and worked flake side scrapers, but also a huge end-worked blade and a muller, both diagnostic of the Sand Hill complexes. These in turn overlay a white sand layer, zone C, which at its juncture with zone B had a floor-like deposit, zone C1, with two semi-lunar chopper fragments, and a small stemmed or snub-nosed end scraper diagnostic of the Lowe-ha horizon. Our attempt to get a radiocarbon 14 date on this horizon failed. A tree root we thought was a hearth turned out to be 560 A.D. $\pm$ 75. It might be added, however, that the Lowe-ha horizon was better represented in the lowest zone, zone B, of the west end of the site, BAAR 35W, where not only was there a snub-nosed end scraper, but also a crude blade and a fragment of rounded shouldered fishtail point. It might also be noted that in the six 1-meter squares to the west the upper gray sand, zone B1, and the humus zone A, contained many artifacts of the Sand Hill complex, including macroblades, mullers, discoidal bifaces, and Pedernales-like point fragments. Further, the surface collection from the west included even more Sand Hill diagnostics.

BAAR 31 and Other Sites

The other site we dug which had stratigraphy at Sand Hill was BAAR 31, a kilometer or two to the south of BAAR 35. This site covered about 70 meters by perhaps 40 meters, and it too is a sand knoll, near a pot-hole lake rather than a stream. It also had an east and a west component in terms of the surface collection, but our single test in the east revealed no stratigraphy. Our test to the west did have some quite well-defined strata, including zone A, the humus, zone B, a 10 to 30 cm thick whitish gray sand containing Belize artifacts--a hemisphoidal stone bowl, a milling stone, and

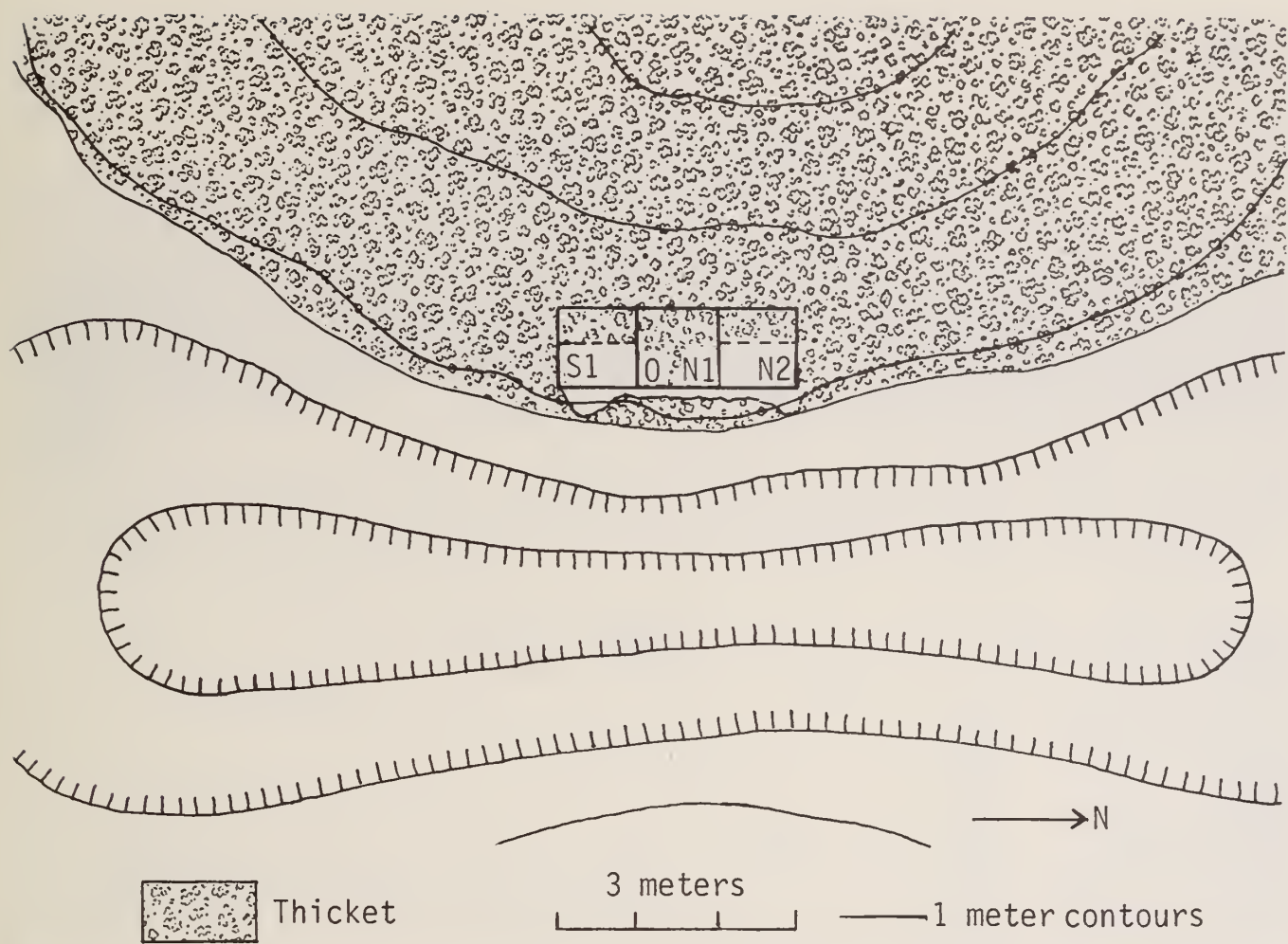


Fig. 11. (upper) Sketch of "island" tested at Sand Hill, public work quarry site BAAR 26 east of the highway.

(lower) Ross sketching, MacNeish cleaning profile, and Nelken-Terner taking notes at BAAR 26.

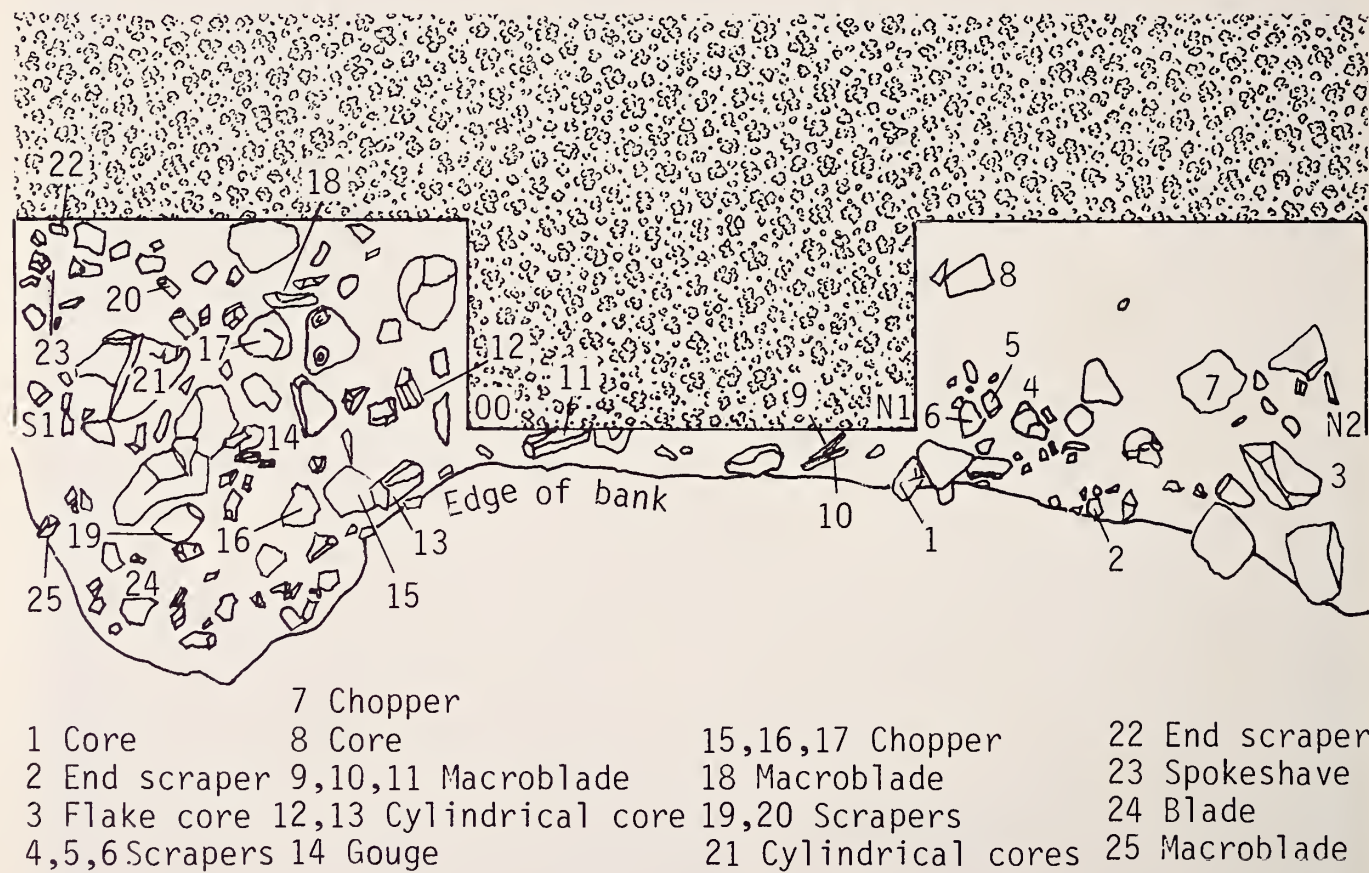
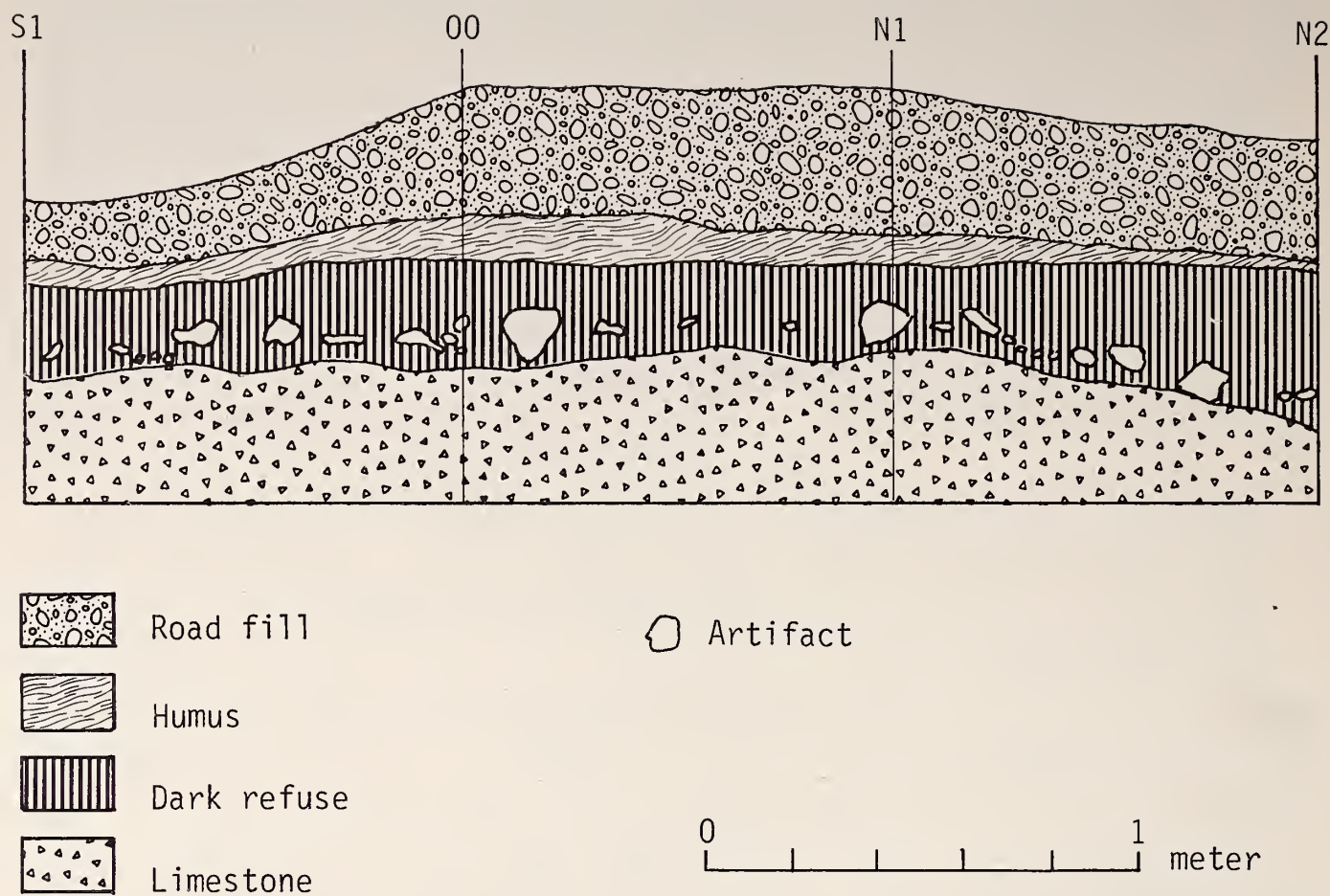


Fig. 12. (upper) Profile drawing of east test wall showing occupation at bottom of refuse layer.

(lower) Vertical drawing of in situ artifacts found in occupational layer.

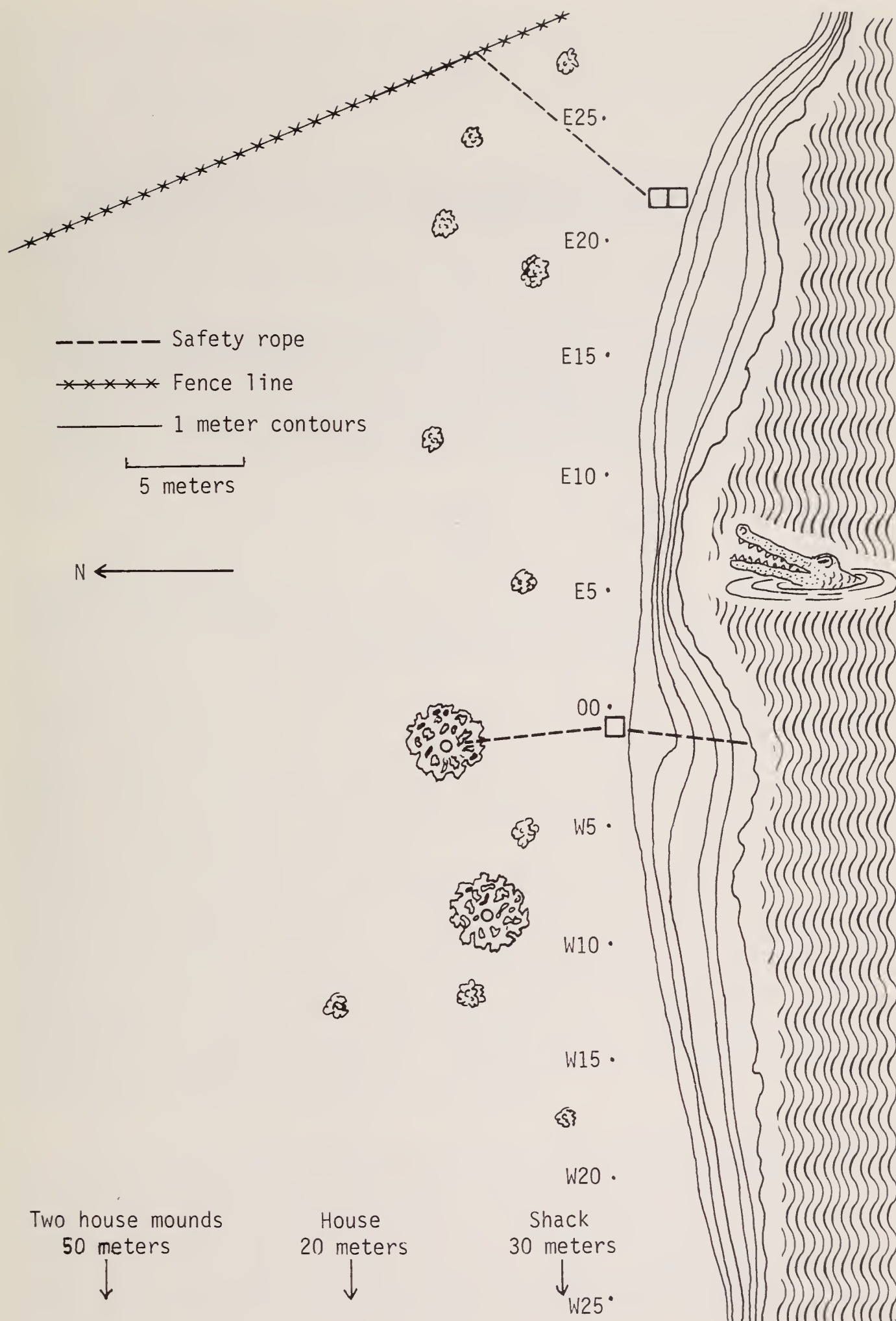


Fig. 13. Sketch map of Oshon site, BAAR 71.

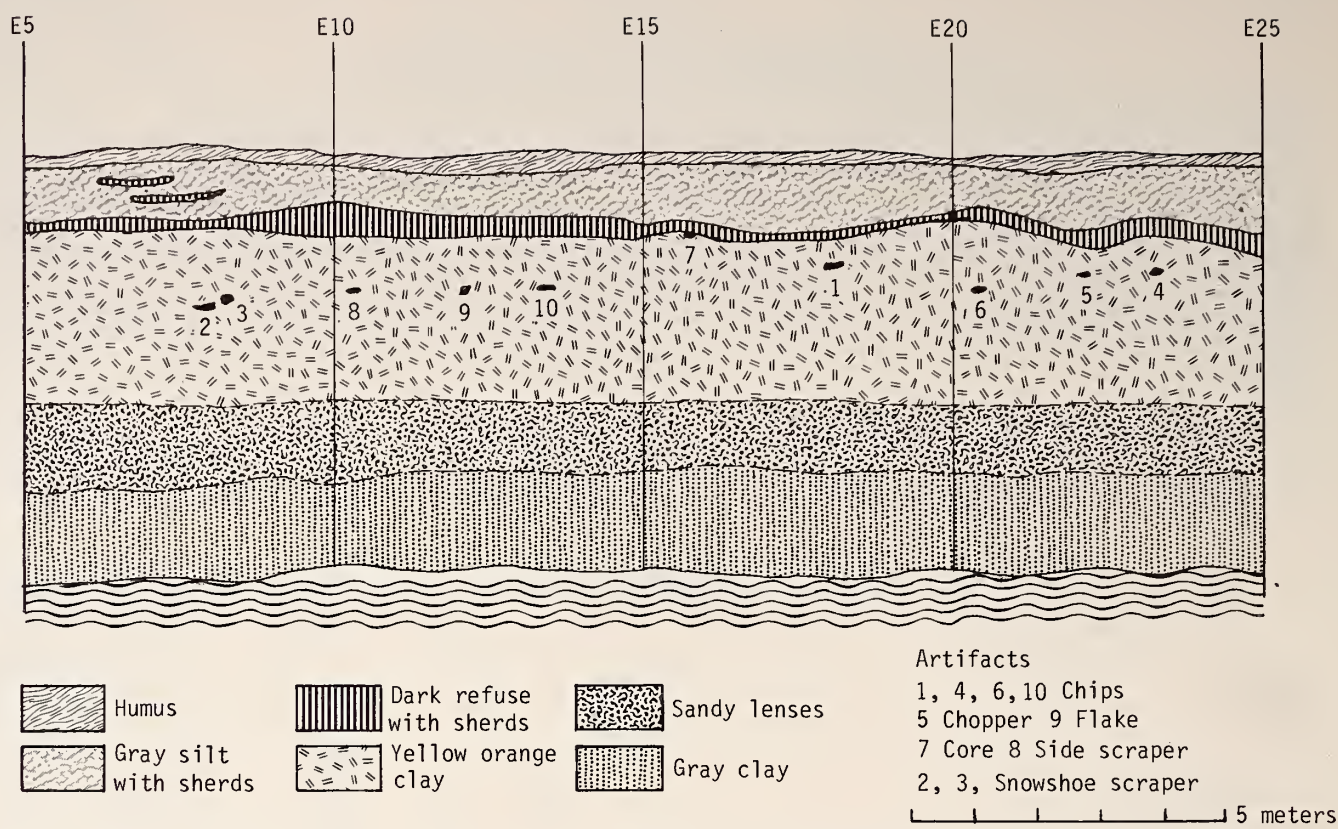


Fig. 14. Sketch of the river basin at the Oshon site with in situ preceramic artifacts indicated.

and anvil--and zone C, the lower zone of yellow sand. At the junction of zone C with zone B, we found zone B1, which contained macroblades as well as semi-lunar choppers or gouges--all Sand Hill artifacts. Obviously, both BAAR 31 and 35 should be intensively dug, for here are our first three complexes--Lowe-ha, Sand Hill, and Belize--in good chronological order.

The other site we tested in the Sand Hill area was across the highway to the east, BAAR 26. Department of Transportation bulldozer operations allowed us to make a huge surface collection, but unfortunately, these highway department operations left only a few spots untouched. We chose one island-like portion to test with three 1 meter squares. Our test revealed a layer of quarry remains by the Sand Hill people at a depth of about 40 cm but no cultural stratigraphy, although the surface collection suggests that a number of groups quarried this area. Thus, once again our initial test gave us early materials in good excavated contexts. It might be added that surface collections at BAAR 32 yielded artifacts of the Melinda complex, but the complex did not show up in our tests, and its stratigraphic position had to be defined by our tests to the north near Orange Walk.

One of the most important of these was on a small knoll along the New River, just north of the town of Guinea Grass. Here we did little formal digging, but instead cleaned off the 2 m high bank along a 5 to 10 m area cut by the river. The top 20 cm contained humus with sherds in it--perhaps of the Formative period. Below the humus was a 20 to 40 cm thick sticky gray clay layer, zone B, that had a number of chips in it and two flake side scrapers, but more importantly, it also contained an elongated scraper plane and a tranche-type adze. This scraper plane and adze were both diagnostic of the Progreso complex, although they were also used during the Formative Period. Underneath this well-defined gray clay layer was an ill-defined sandy, yellowish clay zone about 40 to 60 cm thick. Sticking out of it was a crude adze-gouge as well as a crude biface--both possible diagnostics of an earlier preceramic complex we call Melinda. Thus, between stratigraphic tests at this site and at Sand Hill, we had the complex preceramic sequence. A very small test at Betz Landing, BAAR 6, on the southwest end of Progreso Lagoon, tended to confirm this sequence, for in a 10 to 20 cm gray clay layer, zone B, were a crude adze-gouge, an elongated scraper plane, a biface core, and a well-made bifacial knife--all Melinda diagnostics. In the humus and on the surface were Progreso artifacts. In nearby sites Classic and Formative sherds usually occurred in the humus.

One of our sites, BAAR 71, along the Sibun River, linked the Sand Hill and Orange Walk preceramic stratigraphic series somewhat. In survey Wilkerson had found a 5 m river northern cut on the Samuel Oshon farm, containing two snowshoe shaped scrapers at a depth of a meter and a half under Classic sherds, along with some stone tools like the Progreso preceramic. A day was spent further scraping the bank, and a macroblade and two crude side scrapers turned up in the preceramic stratum along with a host of chips. The occupation

seemed to be of the Sand Hill type found under Classic remains. It might be added that our other test of 2 m² pits at BAAR 70 nearby turned up crude stone tools with Formative sherds and no clear-cut stratigraphy. Thus, our tests did give some very tentative stratigraphic results that tended to confirm our seriation of artifacts and various open non-ceramic sites.

The Seriation

It was this seriation that was the basis for our very tentative definition of a series of artifact types that seemed to be good time markers and which were the basis for establishing five sequential complexes composed of clusters of these types, with their overlapping types indicating continuity and the sequence. Obviously, all this is very tentative and our types as well as our complexes or tentative phases will change as larger samples of artifacts from better stratigraphic contexts become available. Be that as it may, for the moment this is all we have, and for that reason it is worth describing, not only because thus one can establish hypotheses to be tested later but also because something, as tentative as it may be, is available on the preceramic for the Maya Lowlands.

In actual fact, the seriation was done in four stages, and it first started when we had only about 52 sites from the reconnaissance and had done no testing. Initially we divided the 500 or so artifacts we had into seven general classes--haftable pointed (projectile points) bifaces, end retouched unifaces, side retouched unifaces, general bifaces, blades, macroblades, and ground (or pecked) stone tools. Then the sites with each of the classes were compared, and the classes of artifacts were subdivided if they seemed to be good time markers. For example, BAAR 35 had a Plainview-like point and three fishtail points, while BAAR 34 had a fishtail and a Pedernales-like point; these two were aligned as first. BAAR 52 had one of the latter so it was positioned as second. BAAR 51 and 32 both had Shumla-like points but the latter also had a possible Pedernales-like base of a point, so BAAR 32 was positioned as third, 51 as fourth and BAAR 3 had a straight stemmed point so it was positioned as fifth. Here, on a very tentative level were five sequential complexes with five trial types.

Next we did the same thing with other biface fine ovoid ones occurring earlier, then coup de poing ones, thick bifacial cores, discoidal choppers, ovoid bifaces, triangular coup de poings, and five bifacial knives, thus aligning another 20 sites as well as the previous five in a seriation order. Crude blades were used to align early sites while various kinds of macroblades aligned our second (Sand Hill) and sherd complexes (Belize). Grinding stones also showed neat developmental changes through time, so eventually about 25 sites or components were put in chronological order on the basis of the trends and the overlapping of our 50 or so trial types. The next step was to plug in our artifacts from our test excavations; this very much confirmed our sequence of types and sites, and brought our total

sites or components arranged in chronological order to about 31 and the total number of artifacts classified to about 600. All this had been done mainly by Nelken-Terner and MacNeish, but the final results of the classification of the first 88 sites found in survey with over 1,000 artifacts from another 46 surface components were discussed with Wilkerson before the latter left at the end of May. This is what the sequence is really based on--72 sites and 50 types represented by a sample of over 1,000 artifacts. The final classification was done by MacNeish based on the field notes of Wilkerson and survey forms on the final 72 sites found in survey. Here no actual counts were made, but because of diagnostic traits mentioned in the field notes, 20 of these sites were classified as to tentative phases or complexes. More detailed future analysis may modify these tentative conclusions, but the basic picture should not change.

Now having described our rather naive seriation analysis and having shown charts of the data and alluded to the artifacts of each of our complexes, let us describe our complexes in as much detail as possible at this preliminary stage of our investigation. Obviously, as we really do some intensive excavation, all this will change, but here is how we see it as of 1980 at the end of our initial "hit and run" reconnaissance.

Tentative Sequence of Complexes

Lowe-ha Complex

The earliest complex we have described, Lowe-ha, is named in honor of Mr. David Lowe who showed us these first sites on his land or place (ha). Only two excavated components of this tentative phase or complex occurred back at BAAR 35, one to the east in zone C and the other to the west in zone B. They produced only chips and a handful of artifacts (about 10), and the surface collection from the site, which yielded only 41 artifacts, did little to improve the matter. All the other possible components, BAAR 100 and 158C, came from Wilkerson's later survey, and no artifact counts were undertaken, so that their classifications were based on probably less than 100 artifacts, which is not very good at best. All will change with future excavation, but as of now all components or sites are very small and all are on sand ridges in various relations to inland water resources. The projectile points are very distinctive. One is a Plainview-like base and the other three are fishtailed--one with a rounded shoulder, an El Inga type (Bell, 1965) and the others with sharp shoulders, Madden-Lake type (Bird and Cooke, 1978). Almost as distinctive as the points were the well-made, relatively small end scrapers, including snub-nosed, end of blade, and small stem-like types. Certainly, these people were hunters who worked skins. The relatively small crude blades may also have been used in this skin working, as well as in other duties, such as butchering. The semi-lunar choppers and pointed coup de poing (hand ax-like) tools as well as a variety of side scrapers or worked unifaces could have been used in much the same manner. Obviously, our knowledge of this phase or complex is

Fig. 15. Lowe-ha Complex artifacts

1. El Inga-like point (Pp 1a)
2. Madden Lake-like point (Pp 16)
3. Crude blade unworked striking platform (N 1)
4. Pointed blade (N 6)
5. Plainview-like point (Pp 2)
6. Madden Lake-like point (Pp 16)
7. Crude blade (N 1)
8. Fine ovoid biface (B o)
9. Small stemmed end skrapper (Z 52)
10. Large laterally used flake (ES 1)
11. End of blade scraper (ES 13)
12. Small snub-nosed end scraper (ES 1)
13. Thick crude biface (B 2)
14. Large anvil end scraper (ES 4)
15. Coup de poing-like biface (B 1)



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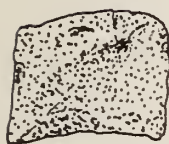
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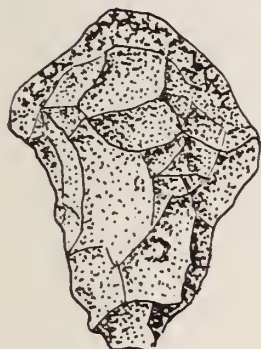
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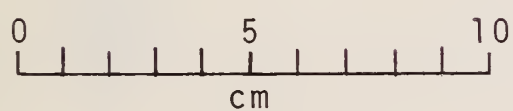


Fig. 16. Sand Hill Complex artifacts

1. - 2. Pedernales-like points (Pp 3)
3. Sole shaped end scraper (E 53)
4. Snow shoe shaped end scraper (E 53a)
5. Coup de poing-like biface (B)
6. Thick crude biface (B 2)
7. Gouge (ES 5a)
8. Petaloid adze-gouges (ES 5)
9. Large ovoid end scraper (ES 4)
10. Macroblade end and side retouched (N 4)
11. Macroblade end retouched (N 4)
12. Macroblade side retouched (N 3)
13. Muller



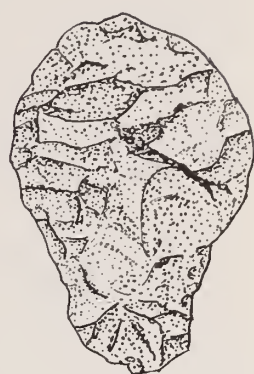
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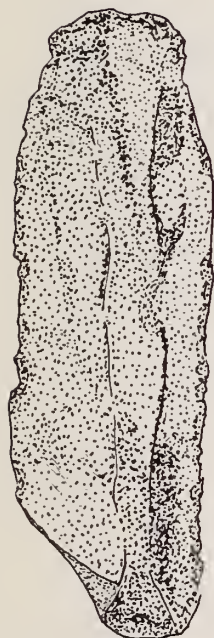
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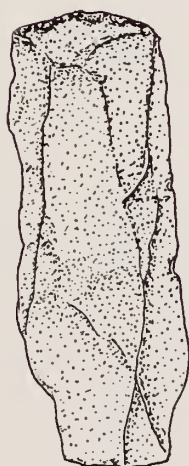
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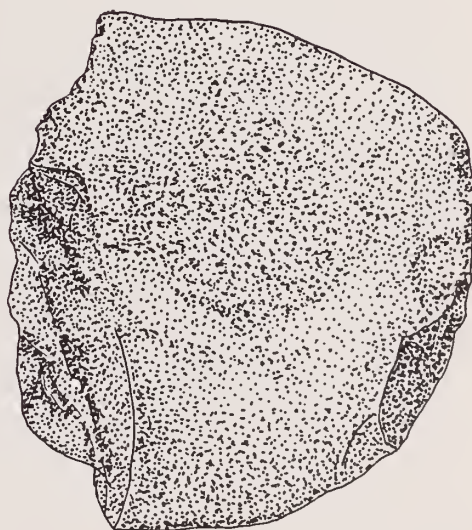
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0 5 10 cm

very limited, but as we shall see, even with our limited materials, and at this stage of our investigation, it stands out as a very distinctive early entity.

Sand Hill Complex

The next complex, named Sand Hill after the area including Mr. Lowe's property, where we found and tested four components (BAAR 31, 35, 26, and 7) of this complex, is much better represented. Not only did we find seven components of this complex in limited survey (BAAR 33, 34, 52, 56, 60, 69, and 86) but also Wilkerson's unstudied survey materials (BAAR 106, 112, 134, 150, 158A and B) indicate six more. Thanks to the quarry site BAAR 26, we have more than 500 artifacts for analysis. Although the corner-tongued and concave base stem points, our so-called Pedernales points, and some of the sharp shoulder fishtail points are distinctive, the real diagnostics of the horizon are the huge blades or macroblades. While some macroblades do occur in ceramic horizons, according to Drs. H. Shafer and Tom Hester, these blades, are made in an entirely different manner, involving large conical cores without prepared platforms and the use of soft hammers (Shafer and Hester, 1979). Further, our macroblades appear to have been utilized in a whole series of different manners. In some, one or both sides were steeply retouched. Others were used against something hard and one or both ends were retouched. And others were utilized and both sides or ends were shaped in a convex or concave manner (like gouges or spokeshaves). Some macroblades were shaped in a combination of the above. In our initial classification for the seriation, we spoke of them as unretouched ones, side retouched ones, and end retouched ones--three trial types--but obviously more analysis of these classes from better archaeological contexts will change all of this. However, like the previous horizon, Sand Hill also has some distinctive end-worked unifaces--the so-called end scrapers. Particularly distinct was one rather large 20 to 40 cm long beautifully chipped snowshoe or stemmed end scraper, a few of which may have lasted on into the Belize horizon. Also distinctive were the large plano-convex flake end scrapers, as well as similar ones with a straight to concave, rather than convex, cutting end--possible gouges. In fact, it would seem that the whole emphasis has stages from working skins and butchering to working wood or other harder materials. Even the so-called side scrapers, laterally worked unifaces, are bigger and cruder, although a few of the semi-lunar ones were well made. The bifaces again reflect this tendency toward largeness--and although the earlier coup de poing ones continued in diminishing proportions, crude ovoid bifaces occurred, which were perhaps chopping tools, as did bifacial cores or very thick teardrop-shaped knives. Again, emphasis seems to be away from the earlier hunting pattern, and the occurrence of mullers, conoidal pestles and milling stones indicate the collecting of seeds was increasing in importance. We think that a whole new way of life had occurred, but this is only a hypothesis that must be tested by future excavations.

Somewhat confirming this is a great increase in the number of components, seventeen in all, only six of which were found in Wilkerson's later survey. Twelve of these were relatively small, perhaps microband encampments, but there were five very large ones so the pattern has shifted. While twelve still occurred on the sand ridge inland one was along the edge of a river (BAAR 71) and the other four were in a marine lagoon situation, which might even have been a group of islands during this geological period. Certainly, these people had some sort of watercraft and some of those woodworking tools mentioned earlier may have been involved in the making of boats. Whether the exploitation of marine resources as well as sand ridge resources was connected with any sort of a seasonally scheduled subsistence system is, of course, unknown, but it is a hypothesis worth testing with further investigations.

Belize Complex

While the macroblades were distinctive of Sand Hill, even more striking were the diagnostics of the following Belize complex--large stone bowls, as well as mortars and plates. Some of the latter carry on even into ceramic times. Here, there is great variety which may be of assistance in further subdividing this very poorly defined cultural phase or complex. We say poorly defined because associated projectile points were rare with this complex and only one possible contracting stem fragment can even vaguely be classified. Also, blades and macroblades are virtually absent, and those that do occur are usually not worked. End scrapers are also not numerous, but gouge-like tools and snowshoe scrapers do continue, while crude plano-convex scraper planes and triangular end scrapers, coming in the form of mortars, mullers, milling stones, and pestles increase in number, further emphasizing the use of plant remains. The bifaces, with the exception of triangular pick-like or coup de poing-like tools, are not radically different from the previous horizon. Although our survey is of a most preliminary nature, the number of sites that could be classified increased to only twenty, but some of them (BAAR 83 and BAAR 158D) were very large--perhaps microband encampments and one is large enough to be a hamlet (BAAR 124). More intensive excavation of BAAR 31, which we tested, may reveal that it, too, was of considerable size. Again, three (BAAR 103, 119, and 124) sites were near marine resources, only one of which was on an island (BAAR 91) while the majority (BAAR 35E, 83, 88, 94, 105, 147, 148, 149, 160, 25A, 31E, 54, 57A, 132, 155, and 158D) were inland, and again there is only a suggestion of a seasonally scheduled subsistence system. Again, let us emphasize that our findings are of a very preliminary nature and our conclusions are most tentative. In fact, the best and most reliable is yet to come.

Melinda Complex

These words are an appropriate introduction to the next complex, Melinda, that is represented by less than 100 artifacts at about 21 sites. The Melinda complex was linked to the early Belize complexes

Fig. 17. Belize Complex artifacts

1. San Nicolas-like point (Pp 4)
2. Thick crude biface (B 2)
3. Discoidal chopper (G 16)
4. Crude scraper plane (E 56)
5. - 6. Petaloid adze-gouge (E 53)
7. Bifaced cone-chopper (B 4)
8. Triangular coup de poing-like biface (B 7)
9. Sharp conical pestle (G 16)
10. Milling stone (G 8)
11. Tecomate stone bowl (G 1)
12. Hemispherical stone bowl
13. - 14. Oblong stone dish



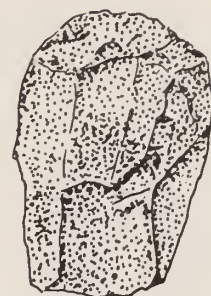
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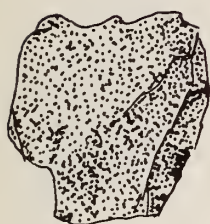
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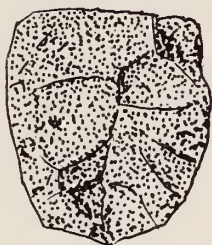
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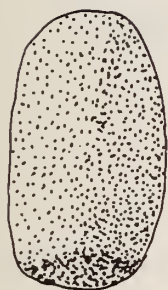
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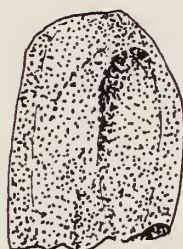
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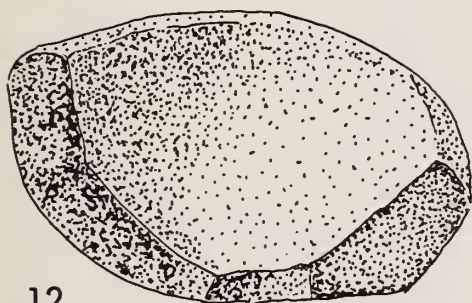
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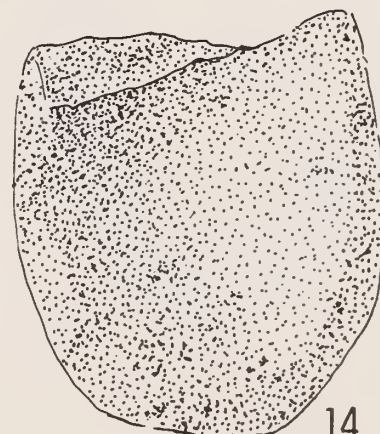
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Fig. 18. Melinda Complex artifacts

1. - 2. Shumla-like points (Pp 5)
3. Triangular end scraper (ES 7)
4. Finely chipped biface knife (B 8)
5. Hamenslow-pestle (G 7)
6. Small discoidal chopper (B 5)
7. Pebble net sinker (G 18)
8. - 11. Discoidal scraper plane (ES 8)
9. Triangular coup de poing (B 7)
10. Large ovoid biface (B 6)



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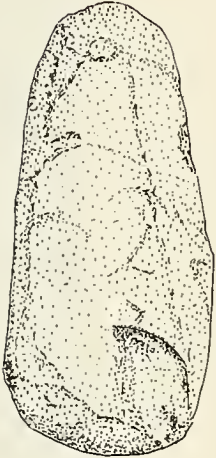
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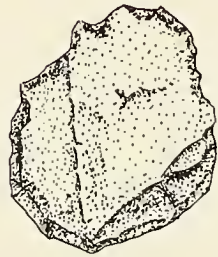
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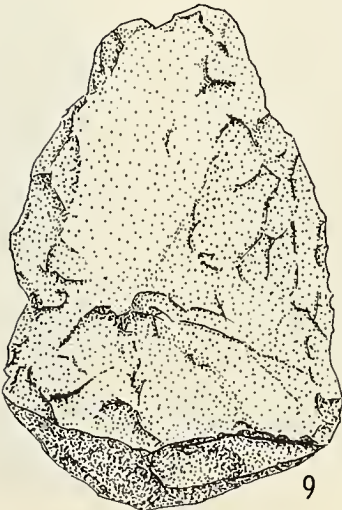
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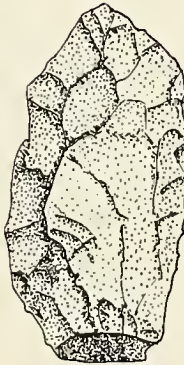
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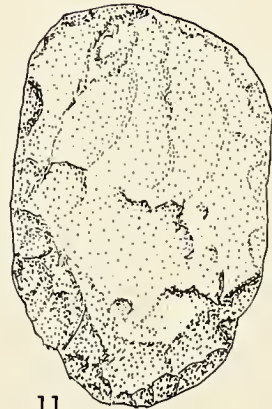
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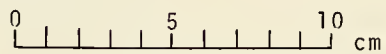
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Table 3. Seriation of excavation sites.

by a chopping stone gouge, triangular end scrapers, and triangular choppers or coup de poings, mullers, pestles, milling stones, and plate-like objects, while many artifacts, including various kinds of scraper planes and fine bifaces, linked it to Progreso. It, however, lacked a host of Progreso diagnostic traits and had Lowe stemmed (Shumla-like) points, large ovoid bifaces, specialized netsinkers, and cuboid pestles not found in any of our other complexes. Further, when we surveyed later, some of the sites we found that might belong to this complex are much larger than the sites located in the previous survey, and half the sites we found in the later survey were in marine situations. Certainly, there had been a settlement pattern shift, with obvious implications concerning marine or aquatic subsistence resources, but neither of these phenomena can be adequately understood at the present stage of our research. On a comparative basis one might also expect some indications of plant domestication and some sort of agriculture, but of these we do not have a hint. The lack of manos and metates in the following Progreso complex do suggest that they did not have corn agriculture but again adequate proof is lacking. Some of the extension and size of BAAR 84 and 107 suggest hypothetically that they were hamlets. Again the increasing site size and shift towards the sea implies major cultural changes, but exactly what they were must await future researches.

Progreso Complex

On a slightly more secure level is the Progreso complex, represented by a couple of hundred artifacts and about 34 sites, but again about half of these were from the later part of the survey, and were never fully analyzed. The typology of the artifacts defining this complex is, however, on a much firmer footing, for a number of these have been described and classified in ceramic horizon by endeavors of Colha and Cuello. These would include the mano, metates, oblong plates, anvils and abraders in the ground stone realm as well as small discoidal scraper planes, gouge-like adzes, leaf-shaped points, long keeled end scrapers, fine ovoid end scrapers, large pebble netsinkers, and chipped pick-like objects. In fact, only the larger straight stemmed projectile point, triangular scraper planes, and generally longer proportion of elongate scraper planes stand out as distinctive for this horizon. Of course, the total lack of ceramics at any of these sites with basic ceramic lithic types is distinctive in and of itself, with the obvious implication that the later ceramic sites developed out of the complex. At this stage this is more easily stated than proved, but we do have many sites in the survey that can and should be excavated in order to study this and other problems. All we need is the time and money. However, even at this stage the manos and metates do suggest some sort of agriculture, and the size and extent of BAAR 61, 77, 78, and 197 hint that village life had arrived, but again, all these hypotheses must be tested by future research. Further, there are hints that a major shift in settlement patterns had occurred, for fifteen of the sites of this complex are associated with rivers, fourteen with marine situations, and only five with inland sand ridges.

Limited and poor as is our data about this complex, it would seem likely that major cultural changes had occurred since the time of the previous Melinda horizon. Again, without intensive interdisciplinary investigation just what these changes were cannot be determined, nor can we grasp the development into the early Swazy type of culture with ceramic and complex village life.

Tentatively Dating the Complexes

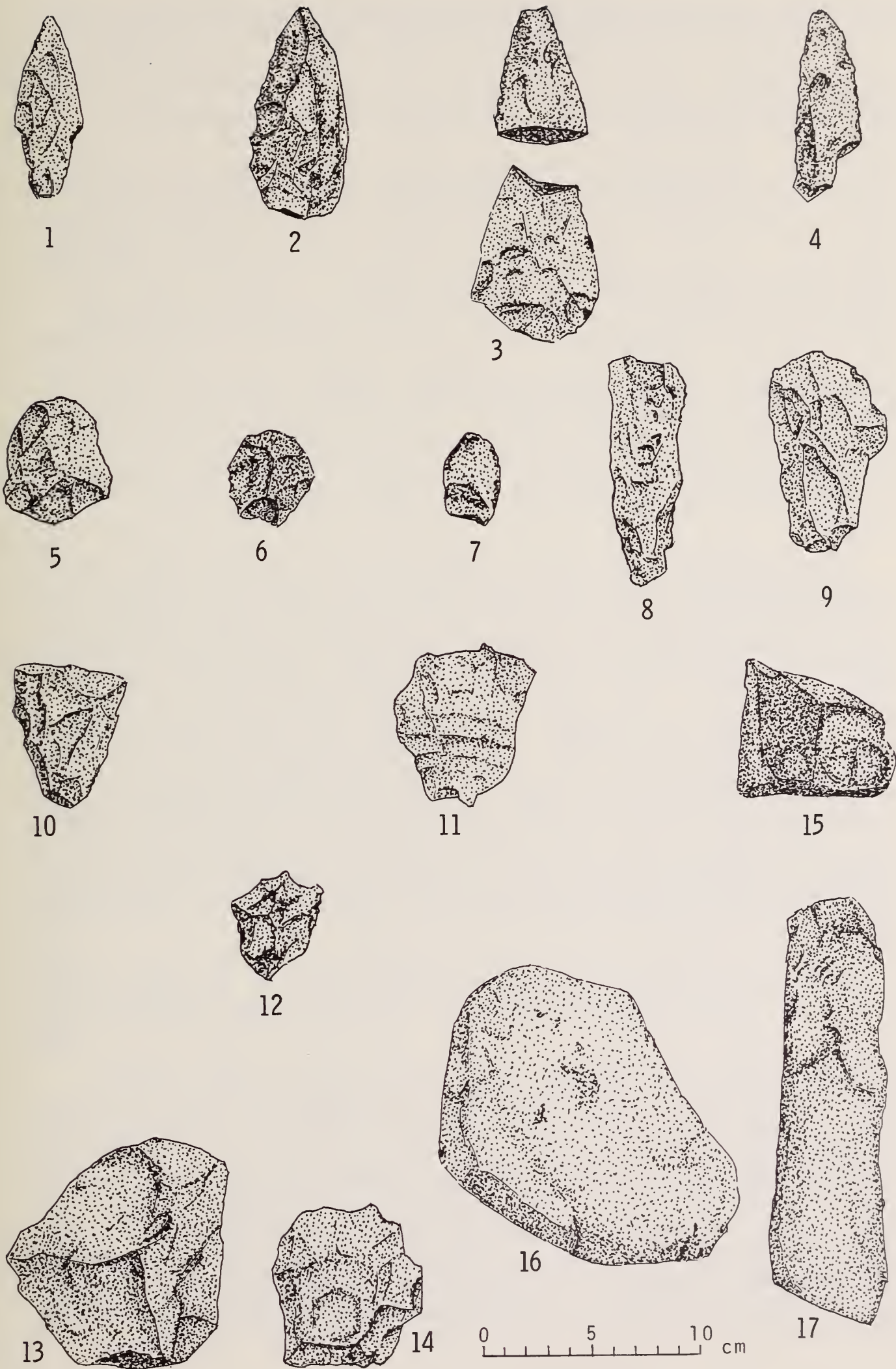
All this and much more lies before us. We have made but a start at understanding the first 7,000 or 8,000 years of cultural development in the Maya Lowlands. However, it seems to be a good start, for we have gone from no Belizean preceramic sites to at least 106 sites in one brief season. Further, we have hints of five sequential complexes: Lowe-ha, Sand Hill, Belize, Melinda, and Progreso, and these do seem to be real entities, poorly defined as they may be. Let us again emphasize that the basis for their chronological order is very shaky, belonging to a few poorly documented tests and seriations of poorly defined artifact types. Perhaps the best we can say is that we have a hypothetical chronological framework of hypothetical cultural complexes that must be tested by future research. Having gone this far, and some of our colleagues will say this is way too far, the question becomes: can we date these complexes, and the answer is a faint yes. In lieu of radiocarbon dates and other chronometric techniques, the best we can do at this time is to use the comparative data relevant not only to dating our complexes, but which will also serve to confirm the existence of some of our hypothetical culture complexes. Thus, premature as it may be, let us try to give chronometric estimates to our complexes, not only to further place them in time and space, but also to indicate archaeological problems that need to be solved in this realm.

The fishtail and Plainview-like projectile points are obviously types that occur elsewhere in the general time period from 9,000 to 7,000 B.C. Plainview or Plainview-like points have been found mainly north of Belize, the nearest being in Tehuacan, in Ajuereado context from 8,000 to 7,000 B.C. (MacNeish, Nelken-Terner, and Johnson, 1967), and on the surface in Puebla (Angel Garcia Cook, 1973). They were also found in Tamaulipas, both in the Nogales complex (MacNeish, 1958) as well as in J. Epstein's sites in the San Carlos Mountains, and also in his sites in Nuevo Leon (Epstein, 1969). Plainview points occur at Devil's Mouth as well as in other sites along the Rio Grande (Johnson, 1964) and of course, they abound in west Texas. Everywhere the radiocarbon dates are from between 8,500 and 7,000 B.C., and if our Lowe-ha Plainview-like base is related, it should be in this range.

While Plainview points range north from Belize, fishtail points range south from the same place. Unfortunately, most of these are not directly radiocarbon dated, and, because of the relatively poor analysis done on points of this type in South America (Bird, 1969) they can only be vaguely estimated as dating between 9,000 to 7,000

Fig. 19. Progreso Complex artifacts

1. Progreso stemmed point (Pp 7)
2. - 4. Leaf point (Pp 6)
3. Finely chopped ovoid biface (B 8)
- 5, 6, 7, 12A. Small discoidal scraper planes or end scrapers (E 8)
8. Long keeled endscraper (ES 11)
9. Triangular scraper plane (ES 9)
10. - 11. Adze tranchet (ES 10)
12. Triangular end scraper (ES 7)
13. - 14. Scraper plane (ES 6)
15. Anvil abrader
16. Metate (G 4)
17. Mano (G 12)



B.C. The closest recorded site with fishtail points came from near-by Guatemala City at the Villatero site (Hayden, 1980). Bullens' earlier survey in Honduras also noted some fishtail points (Bullen and Plowden, 1963). Points of this type have been reported from Guatemala (Brown, 1980) and Mannix Lake in Panama (Bird and Cook, 1978).

Thus, in a general way, the relatively good dating of Plainview points is confirmed by the poor estimates on fishtail points to the south, and both hint that Lowe-ha is dated somewhere in the range of 8,000 B.C. $\pm$ 1000. The only other relative materials are the ends of blade scrapers and keeled snub-nosed scrapers of Lowe-ha that are identical to ones from Loltan Cave in Yucatan, where they are associated with horse bones and other extinct animal bones (Noberto Gonzales, personal communication). Various estimates on the extinction of Pleistocene animals would place these animals' extinction and thus the associated scraper type in the period before 1,000 years ago, and this again would tend to put our projectile point estimates for Lowe-ha from 9,000 to 2,000 B.C. Future research will undoubtedly confirm or deny our estimates, but this is the best we can do as of now.

Unfortunately, it is better than we can do for Sand Hill, for the only projectile point type that has so far been found in that site is vaguely similar to the Pedernales ones of Tehuacan (MacNeish, Nelken-Terner, and Johnson, 1967), Tamaulipas, and Texas (Krieger and Suhm, 1954). Their range is considerable, running from roughly 7,000 to 3,000 B.C. The large blades or macroblades may also possibly be related to the Aguas Verde complexes in the Caribbean that might date as early as 5,000 to 4,000 B.C., but again, the cross-dating is not good. In fact, while Sand Hill might start as early as 7,000 B.C., dating the ending of the period is more difficult. In fact, perhaps the best way of dating the end is to estimate when stone bowls began to be manufactured in Mexico--especially in late El Riego / early Coxcatlan at about 5,500 B.C. (MacNeish, Nelken-Terner, and Johnson, 1958) and assume that stone bowls were connected and appeared at about the same time in Belize.

Thus, our dating of the Belize complex might be the time period of the dominance of stone bowls in the Coxcatlan phase of Tehuacan in Mexico, roughly 5,500 to 4,200 B.C. (MacNeish, Nelken-Terner, and Johnson, 1958). The dating of Melinda and, I might add, the end of the Belize period may be about when the Shumla-type (Krieger and Suhm, 1954) of projectile began in Mexico in the Abejas or late Coxcatlan phase--again, somewhere between 4,200 and 3,500 B.C. Exactly when Melinda ended and Progreso began is even more difficult to determine, although Progreso must end about when ceramics began in Belize and Swazy just after 2,500 B.C. On a guess we have picked the date 3,700 B.C. as being approximately when Melinda developed into Progreso, for this is when the manos and metates that occur in Progreso also occurred in Abejas in Tehuacan. As is perhaps obvious, all these attempts at dating our supposed sequential phases are unsatisfactory and most tentative, but they are the best we can do at

present. We do feel sure our proposed research program in Belize with a proportion of the budget devoted to radiocarbon 14 dating will change all this.

Now, having touched on some of the chronological implications of our data, as a final part of this very speculative report, let us turn to some of the implications of our settlement pattern data, as suggested by our surveyed sites along with their various sizes and locations in various ecozones.

SETTLEMENT PATTERNS

Settlement patterns during each of the five successive periods can be summarized as follows.

Lowe-ha: During this period of hunting subsistence, microbands appear to have been the only social unit. Sites were found in two environments in the Belize sample. One, a sand ridge with sink hole, is likely to be a dry season location where water and hunting would be abundant. The other environment is a sand ridge and stream, where hunting and water would be plentiful, especially during the rainy season. While superficially this suggests a yearly cycle of movement between sink holes in the dry season and sand ridge streams in the wet, it does not reflect the use of rock shelters, which have not yet been surveyed. Future survey and exploration of these features, mostly in the middle drainages, should provide considerable new information to modify our understanding of this early complex in Belize.

Sand Hill: The seventeen sites of this complex were found in four varied environments, and this suggests seasonal movement. Sites were encountered in sand ridges, a high river terrace, estuarine islands, and sand ridges with streams. The use of estuarine islands at this time implies the use of canoes for transport, a new mode of movement which must have opened considerable new resource areas to the coastal peoples of the Holocene. The islands, useful as fishing stations and, in some limited cases, for hunting, could be used most effectively during the early dry season. At that time access would be unhindered by strong currents and flooding, and both riverine and marine fishes would be available in the clear waters. Sites found in such locations are consistent with temporary microband task oriented camps.

Larger sites (3) indicative of macrobands were found on sand ridges by sink holes and on a high river terrace. Both locations were appropriate for late dry season/early wet season exploitation. One of the sites with a nearby sink hole was also a large quarry site from which many of the diagnostic macroblades were obtained. The fourth environment, sand ridges with streams, may have been used in microband units toward the end of the wet season. At that time game would concentrate on smaller tributaries away from the flooded rivers and lower drainages. During the dry season streams in such areas often dry up or reduce their flow considerably, making them

	Low- ha	Sand Hill	Belize	Melinda	Progreso	Totals
hamlet more than 4000 m ² 1500				4% 1	14 4	05 5
hamlet or base camp - 3500 m ²			5% 1?	+?	+?	02 1 (+2)
macroband - 2000 - 4000 m ² 1500		24% 4	30% 6	39% 9	25 7	28 26
microband - less than 2000 m ² 1500	100% 4	76% 13	65% 13	57% 13 (+1)	61 17	65 60
hamlet or basecamp in cove of freshwater lagoon					(+1?)	(+1?)
hamlet - on terrace riverine					1	1
hamlet - on point in freshwater lagoon					1	1
hamlet on island in estuary					1	1
macroband on island in estuary				1	5	6
hamlet - shore (cove) of salt water lagoon				1	1	2
microband in cove of freshwater lagoon				1	1	2
microband on island in river				1	1	2
macroband shore cove of salt water lagoon				21 (+1?)		1 (+1?)
macroband sand ridge near stream			1	2	1	4
microband - terrace on river			1	(1?)	2	3 (+1?)
hamlet or base camp terrace near stream			1			1
macroband - terrace near stream			1	2	1	4
microband - island estuary		4	1	6	4	15
macroband - sand ridge near sinkhole		3	4	2		9
macroband - terrace on river		1		1		2
microband - sand ridge near sinkhole	1	5	3	2	2	13
microband - sand ridge near stream	3 (+1)	4	8	3	7	25 (+1?)
Totals	4 (+1)	17	20	23 (+2)	28 (+?)	92 (4)

Table 4. Settlement pattern types by phase.

useful to hunters only for a limited period during the year.

While further analysis following excavation is required to confirm or modify this pattern, a yearly change from microband to macroband and back to microband is indicated by the present data. The larger social grouping would have occurred at the end of the dry and the beginning of the wet season when game is plentiful around higher sink holes and river terraces. Fishing in the latter case would be possible but would be interrupted by the turbulence and silt of the first storms of the season. This is also the time when many wild fruits ripen and would be easily accessible in such areas. The late wet season would be a time of breaking down into smaller microbands to exploit the game near the now-flowing higher tributaries. Then the onset of the dry spring months would prompt movement of the microbands down river to the abundant estuarine resources where the islands made excellent bases for subsistence activities.

The distances involved in such seasonal movements are not yet known with exactness but from the Sibun - Northern - Southern Lagoon drainage (this hydrographic unit is discussed in the survey section) we can obtain at least some tentative figures. There, the distance by water from the estuarine island sites to the high river terrace sites varied from 18.5 to 27.75 kilometers. According to various informants in the region today such distances were covered in dugouts in one day of paddling. Interestingly enough, by another routing (one-half by water) a sand ridge - sink hole site of Sand Hill date is distant from the estuarine islands by a similar magnitude--22 to 32 kilometers. For the moment, at least, distances traveled seasonally by the people of the Sand Hill complex do not appear to be great in the compressed resource areas of central coastal Belize.

Belize: The twenty sites of this complex were found in the same four environments as those of the preceding complex as well as on stream terraces. The areas occupied by these sites represented a 33% increase over those of Sand Hill, attesting to a significant rise in population. There is also an increase in macrobands and, most important, the first possible hamlet or very large base camp recorded for the Archaic Period in Belize. Such population modifications could only come about through changes and intensification of the subsistence base. This is attested to by the new abundance of stone bowls used in the preparation of plants.

The small possible hamlet or very large base camp dating to the late part of the Belize complex was located on a high stream terrace. Its location on a short tributary of the Stennis and the only Swazy drainages. Its central location also placed it within four kilometers of the Stennis estuaries and the nearby terraces of the Swazy River. With a year-round source of fresh water, a location secure from flooding, and easy access to at least four seasonally exploitable environments, plus the new partial reliance on plants, the site could support permanent occupation by the end of Belize times. Such a central location for minimal movement in response to

seasonal subsistence shifts is generally a harbinger for settlement subpatterns of the late Archaic.

The pattern of seasonal microband-macroband movement certainly remained the standard for most of the population throughout Belize times. Sites consistent with macroband size were located on stream terraces, on sand ridges with sink holes, and, in one instance, on a sand ridge by a stream. These environments, suitable for late dry and wet season utilization, could support larger aggregates of people during peaks of seasonal abundance. Microband size sites were encountered on an estuarine island, river terrace, and, most frequently, sand ridges near streams. Sites in this latter environment are, as indicated in the discussion of the individual environments, often near or among oak clusters. What is being ground in the stone bowls of this complex? Both savannah grasses and acorns are possibilities but a definite answer will have to await excavation and plant analysis. At any rate, the streams in such environments begin to dry at the end of the wet season, and these people, regardless of specific diet, would have been forced to move to more secure larger water sources in the following months.

The distances between the seasonally exploited environments tend, to the degree we can derive figures at this point, to be smaller than in the preceding Sand Hill times. Stream terrace locations are within two to four kilometers of estuarine and riverine environments. Sand Ridge and sink hole sites are often within 3.5 to 6 kilometers of the small sand ridge and stream sites. While we cannot be certain until the survey and excavations are completed, the general pattern for Belize settlement suggests less movement, more central site locations at convergent ecozones, greater intensification of environmental exploitation (including plants), and larger groups of people remaining together for longer periods of the year.

Melinda: Twenty-three sites with artifacts of this complex were found in seven environments, including three new ones: marine shore-terrace, cove on a fresh water lagoon, and a low river terrace. These additions reflect the increasing aquatic resource orientation of the late Archaic in coastal regions. Fourteen sites, 60% of the total, are on lagoons, rivers, or major streams. Melinda sites show a total of 8% increase in area over the Belize total, affirming further population increase.

The major social grouping occurred in a large hamlet, appropriately enough on a former marine terrace by a predominantly salt water lagoon (Southern Lagoon). Like its predecessor in Belize times, it was located within a few kilometers of various exploitable environments. Both estuarine and the higher sand ridge zones are found at short distances.

The seasonal microband-macroband cycle continued. However, the presence of sites of macroband size in environments previously used only by microbands suggests that in some regions the subsistence techniques were sufficiently successful to permit macrobands to

stay together longer or even year-round. Specifically, macroband sites were now found on estuarine islands and sand ridge sites by streams where they were rare or had not occurred at all before. With the inclusion of these environments some macrobands were very likely present in all seasons of the year, at least in the region of Southern and Northern Lagoon, where the ecozones of the coastal plain are compressed, and resources may have been exceptionally abundant. Further survey in other coastal areas may demonstrate this tendency elsewhere. Twenty-six percent of the sites of this complex can be attributed to macrobands.

Seventy percent of the Melinda sites, however, are of sizes associated with microbands. They occur in all seven environments but are most common on estuarine islands and sand ridges, as they were in Belize times. Nevertheless, their new presence in a low river terrace, marine terrace, and fresh water cove imply a broadening exploitation of aquatic resources, probably in the late wet and dry seasons.

While the basic pattern of wet season macrobands and dry season microbands continued, population increasingly focused on riverine-estuarine environments in larger social groupings and for longer time periods during Melinda times. More survey and excavation will be required to confirm this pattern and supply a fuller understanding of how diet may have changed further and affected population densities.

Progreso: Twenty-eight sites with artifacts of this complex were located in nine varied environments--the greatest variation of the five Archaic Period complexes. Continuing the emphasis on aquatic and coastal resource areas, 71% of the sites were now located in the lower drainages and coastal lagoons. Population continued to increase, as sites of this complex had a total of 47% greater area than those of the preceding Melinda complex.

Social units also continued to increase. Fourteen percent of the sites correspond to hamlets, 25% to macrobands, and 61% to microbands. These figures are superficially deceptive, however, as hamlets may be four to seven or more times greater in size than a microband site and two or more times greater than a macroband. Using average figures for the surveyed sites in the present sample, it is possible that a maximum of 44% of the Progreso population lived in hamlets. The rest lived in cyclical micro-macrobands or permanent macrobands.

The presence of hamlets and macrobands in six of the nine environments recorded for Progreso implies increasingly successful and specialized technologies for exploiting these environments. In addition to those present in the earlier Melinda times new environments included a point on a fresh water lagoon and a sand ridge near an estuary. Hamlets were found on a high river terrace, a former marine terrace, an estuarine island, and a point in a fresh water lagoon. Sites which may have supported macrobands were encountered

in estuarine islands, sand ridges with streams, and a stream terrace. Sites consistent with microband size were found throughout the various environments but were most common on sand ridges by streams. The seasonal microband/macroband cycle continued but with decreased importance. Successful exploitation of the varied estuarine riverine environments were making long distance seasonal movements less necessary.

The shift in preferential environments is quite marked. Sand ridges by sink holes, 47% of the sample in Sand Hill times, is reduced to 7% of the Progreso sample. Likewise sites on sand ridges and streams, where 45% of the Belize sites were found, are reduced to 21% by Progreso times. Estuarine island locations only account for 4% of Belize, and 23% of Sand Hill, but rise to 39% of all Progreso sites.

The Progreso pattern appears to be: a substantial increase in aquatic and lower drainage oriented sites, further de-emphasis of inland environmental zones, marked population increase, and larger, more stable social units. In many respects the stage is now set for the emergence of the Mesoamerican village--the building block of the Formative Periods and Maya Civilization.

SUMMARY

1. The Belize 1980 archaeological reconnaissance conducted by MacNeish, Nelken-Terner (C.N.R.S.) and Wilkerson with National Science Foundation support resulted in the discovery of 230 preceramic sites or findspots. Surface collections from 92 of these sites as well as materials from a small number of test excavations have been examined, permitting us to draw a preliminary cultural sequence that will be confirmed or refined following further archaeological investigations proposed here.

2. Based on cross-dated lithic styles we have delineated a sequence of five preceramic phases spanning the period from 9,000 to 2,000 B.C. Tool types and site location data imply a different type of lowland adaptation from that found in the highlands during the Mesoamerican Archaic. The preliminary phases and suggested exploitative patterns are as follows:

a. Lowe-ha complex (ca. 9,000 to 7,500 B.C.). This early date is suggested by cross-dating of Lowe-ha keeled end scrapers and blades with similar artifacts from Loltun Cave in Yucatan, where fishtail and Plainview-like projectile points were part of a lithic assemblage associated with remains of horse and other extinct fauna. In Belize small Lowe-ha camp sites are located on sand ridges whose characteristic savannah vegetation would have supported large game animals favored by nomadic hunting and gathering groups at the close of the Pleistocene.

b. Sand Hill complex (ca. 7,500 to 5,500 B.C.). Site location data indicate a new economic orientation of Belizean population following the diminution of Pleistocene megafauna. Tropical forest and near-shore sites were occupied for the first time as local groups made more intensive use of a diverse range of lowland habitats.

c. Stone Bowl complex (ca. 5,500 to 4,200 B.C.). Preliminary data for this complex lead us to hypothesize a subsistence-settlement system dominated by seasonal scheduling of resource utilization. Inland areas were occupied during the wet season, while settlements near rivers, coastal estuaries and sea were oriented toward the dry season exploitation of abundant aquatic fauna.

d. Melinda complex (4,200 to 3,300 B.C.). The previously established broad-spectrum adaptation of Archaic Belize appears to have been abandoned after 4,200 B.C., when Melinda phase populations focused their food-getting activities in aquatic habitats. Large coastal sites with extensive midden deposits suggest permanent village occupation or at least the presence of major semi-sedentary base camps, perhaps in the absence of any significant reliance on cultivated plants.

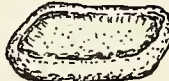
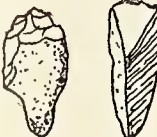
1520 A. D.	MAYA CIVILIZATION										Calendar Pyramids Pottery
1800 B. C.	Swazy pottery										
2500 B. C. Progreso										Agriculture	
3300 B. C. Melinda										Villages?	
4200 B. C. Belize											
5500 B. C.											
Sand Hill											
7500 ± B. C.											
Lowe-ha											
	POINTS	CHOPPERS	BLADES	GRINDING STONES	WOOD GOUGES	STONE BOWLS	NET SINKERS	PLANT SCRAPER PLANES	PICKS		

Fig. 20. Tentative Belizean pre-ceramic archaeological sequence.

e. Progreso complex (3,300 to 2,500 B.C.). This final pre-ceramic complex is associated with a general settlement shift from near-shore to riverine locations where floodplain soils would have been attractive to early farming villages.

RESUMEN. Estado de los conocimientos en septiembre de 1980.-

1.- Durante el año en curso, un reconocimiento arqueológico fue efectuado en Belize por R. S. MacNeish y J. K. Wilkerson (con financiamiento de la N.S.F.), en colaboración con A. Nelken-Terner (C.N.R.S.). Estos trabajos preliminares permitieron localizar 230 hallazgos o sitios precerámicos. El examen de las colecciones de superficie proporcionadas por 80 de estos sitios, así como del material arrojado por excavaciones estratigráficas realizadas en unas pocas calas de sondeo, ha permitido elaborar una secuencia cultural preliminar que habrá de ser confirmada y/o consolidada mediante investigaciones posteriores que proponemos aquí.

2.- Con base en referencias estilísticas sugeridas por el examen del material lítico, proponemos una secuencia precerámica de 7000 años, de 9.000 a 2.000 a.J-C. Tanto los tipos de implementos como los datos contextuales de nuestros descubrimientos parecen implicar la existencia de un modo de adaptación de la población que podría caracterizar las tierras bajas, ya que es diferente del que encontramos en las tierras altas de Mesoamérica durante el mismo período. Las fases y los patrones de explotación del territorio asociados de esta secuencia preliminar son los siguientes:

a- Complejo LOWE-HA (9.000 - 7.000 a.J-C. aproximadamente). La antigüedad atribuida a raspadores carinados y lascas de piedra se debe a que los relacionamos con artefactos semejantes, procedentes de la Cueva Loltun, (Yucatán), donde un conjunto lítico fechado presenta puntas de proyectil de pedunculo bifide (fish-tail) y puntas paracidas a las de Plainview, asociadas a restos óseos de caballos y otros animales característicos de una fauna extinta. En Belize, vestigios de pequeños campamentos Lowe-Ha fueron localizados en terrazas arenosas (sand ridges), una cubierta vegetal característica, la sabana, constituyó probablemente un medio ambiente favorable tanto para las grandes manadas de animales como para los grupos nómadas, cazadores y recolectores, de fines del Pleistoceno.

b- Complejo SAND HILL (7.500 - 5.500 a.J-C. aproximadamente). Los datos proporcionados por la localización geográfica de los sitios sugieren una nueva orientación en la explotación económica del territorio, debido a la disminución de la megafauna pleistocénica. Por primera vez, la selva tropical y las zonas costeras presentan huellas de la presencia de grupos humanos que sacan mayor partido de los diversos hábitats de las tierras bajas.

c- Complejo BELIZE STONE BOWL (5.500 - 4.200 a.J-C. aproximadamente). Con base en los primeros datos relativos a este complejo, sugerimos la hipótesis de un sistema de asentamiento y de subsistencia fundamentalmente organizados por el carácter estacional de la utilización de los recursos. El interior puede haber sido ocupado durante la estación húmeda (de lluvias),

mientras que las riberas de los rios, los estuarios (esteros) y la costa atlantica paracen haber ofrecido, durante la estacion de sequia, abundantes recursos de origen acuatico.

d- Complejo MELINDA (4.200 - 3.300 a.J-C. aproximadamente). La amplitud y la variedad de los modos de adaptacion del hombre al contexto arcaico de Belize paracen reducirse a partir de 4.200 a. de J-C. Hemos descubierto grandes depositos de desechos que implican la existencia de amplios sitios costeros, en los que los habitantes pudieron establecer aldeas permanentes, o por lo menos campamentos-base, cuyo caracter semi-sedentario parece ser independiente de la presencia o ausencia de plantas cultivadas.

e- Complejo PROGRESO (3.300 - 2.500 a.J-C. aproximadamente). A este ultimo complejo preceramico tardio se le asocia un cambio general en el patron de asentamiento: la poblacion se moviliza desde zonas costeras hacia orillas de rios cuyas crecidas proporcionaran suelos inundados favorables a las antiguas comunidades rurales.

RESUME (Mise au point, septembre 1980)

1.- Mene au Belize en 1980 par MacNeish et Wilkerson, finances par la National Science Foundation, avec la collaboration de A. Nelken-Terner (C.N.R.S.), un parcours de prospection archeologique a abouti au repereage de 230 points et/ou sites preceramiques. 92 d'entre eux ont fourni une collection de surface qui, ajoutee au materiel trouve en fouilles stratigraphiques (quelques tranches de sondage), a permis d'elaborer une sequence culturelle preliminaire. Celle-ci devra etre reprise et/ou consolidee par le moyen d'excavations futures, proposees ici.

2.- Nous avons mis en place, a partir des references stylistiques suggerees par l'examen du materiel lithique, une sequence preceramique de cinq phases, que couvre environ 7 000 ans: de 9 000 a 2 000 av. J.-C. Les outils, leurs types, et les donnees contextuelles de nos trouvailles impliquent pour det 'archaïque' un mode d'adaptation des populations different de celui que presentent les hautes terres meso-americaïnes pour la meme periode, et qui serait particulier aux terres basses. Voici les phases et les schemes d'exploitation du territoire de cette sequence encore provisoire:

a.- 'Complexe' Lowe-ha (9 000 - 7 500 av. J.-C. environ)

Nous avons mis en rapport les grattoirs carenes et les lames de pierre auxquels nous attribuons cette anciennete avec les elements d'un assemblage lithique comparable, trouve dans la grotte de Loltun (Yucatan, Mexique) et date: des pointes de trait a pedoncule bifide ('fishtail') et des pointes genre Plainview y sont associees aux restes osseux d'une faune eteinte (cheval, notamment). Au Belize, de petits campements Lowe-ha ont ete reperes dans des zones a terrasses sableuses ('sand ridges'); une couverture vegetale caracteristique, la savane, a du constituer un milieu favorable et pour les grands troupeaux et pour leurs predateurs, groupes de chasseurs-cueilleurs nomades de la fin du Pleistocene.

b.- 'Complexe' Sand Hill (7 500 - 5 500 av. J.-C. environ)

Les donnees fournies par l'emplacement des sites suggerent que leurs occupants se sont orientes vers une nouvelle exploitation economique du territoire, la megafaune du Pleistocene s'etant rarefiee. Pour la premiere fois, foret tropicales et zones de rivages sont mises en cause: on note une utilisation plus marquee des divers habitats de terre basse.

c.- 'Complexe' Belize Stone Bowl (5 500 - 4 200 av. J.-C. environ)

A partir des premieres informations relatives a ce 'complexe', nous avancons l'hypothese d'un systeme d'installation et de subsistance fonde sur la saisonnalite de l'utilisation des ressources. L'interieur des terres aurait ete occupe pendant la saison humide, tandis que les bords de rivieres, les estuaires et la cote atlantique auraient fourni, pendant la saison seche, d'abondantes ressources d'origine aquatique.

d.- 'Complexe' Melinda (4 200 - 3 300 av. J.-C. environ)

L'ampleur et la variété des modes de l'adaptation de l'homme au contexte 'archaïque' du Belize se réduisent à partir de 4 200 av. J.-C. C'est principalement dans les zones d'habitat "aquatique" que se déroulent les activités de subsistance des groupes de la phase Melinda. De vastes dépôts de débris signalent d'importants sites côtiers, villages permanents ou, du moins, campements de base dont le caractère semi-sédentaire semble indépendant de la présence ou de l'absence de plantes cultivées.

e.- 'Complexe Progreso (3 300 - 2 500 av. J.-C. environ)

Ce dernier 'complexe' pré-céramique se caractérise par un net changement dans l'ensemble des systèmes d'occupation du territoire. L'emportant sur les sites côtiers, les emplacements en bord de rivière se multiplient, leurs berges inondables offrant un sol favorable aux premiers cultivateurs des communautés villageoises les plus anciennes.

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